COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION

3975 FAIR RIDGE DRIVE
FAIRFAX, VA 22033-2906
(703) 383-VDOT (8368)

CHARLES D. NOTTINGHAM
ACTING COMMISSIONER

THOMAS F. FARLEY
DISTRICT ADMINISTRATOR

January 10, 2000

Route: 1/123
State Project:0123-076-F29, P101, C501
Federal Project: STP-111-1(114)
County: Prince William
PPMS: 14693

MEMORANDUM

To: Ms. Susan Shaw
Attn: Mr. Jim Bishoff

From: Ms. Brennan Snyder

Attached is a copy of the signed Final Environmental Assessment and Finding of No Significant Impact (FONSI) determination for the subject highway project. This determination was provided by the Federal Highway Administration on December 22, 1999. In view of the FONSI, no further environmental documentation will be required for this highway action. If you require additional copies of the document, please let me know.

As part of this legally binding environmental document process, VDOT is committed to ensuring that the following are carried out:

Page 8: Should any archaeological sites be found during construction, the contractor shall follow the guidelines outlined in VDOT's January 1997 ***Road and Bridge Specifications*** (§ 107.14(d)) regarding the discovery of archaeological sites.

Page 9: VDOT will implement and maintain strict erosion and sedimentation controls in accordance with the Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation's 1992 Virginia Erosion and Sediment Control Manual, third edition, and VDOT's January 1997 ***Road and Bridge Specifications*** (§ 107.14(a) and §303.3). On-site inspections will ensure compliance with contract provisions and proper environmental practices.

Page 9: Disturbed areas will be re-vegetated in a timely manner to minimize impacts to potential groundwater recharge areas. Construction equipment leaks, material storage areas, and on-site maintenance and fueling activities shall be regulated to ensure compliance with the erosion control provisions and sound environmental practices as indicated in VDOT's January 1997 ***Road and Bridge Specifications*** (§ 107.14(b)(1)).

Page 9: The Department will further minimize the potential for groundwater contamination by applying the recommendations suggested in the ***Best Management Practices Handbook: Sources Affecting Groundwater*** (Department of Environmental Quality, Water Division, formerly the State Water Control Board, 1979).

Page 10: All applicable water quality permits will be obtained by Prince William County from the U.S. Army Corps of Engineers, the Virginia Marine Resources Commission, and the Department of Environmental Quality, Water Division, in compliance with Section 401 and 404 of the Clean Water Act.

Page 11: Any necessary hazardous materials remediation will be completed prior to construction.

Page 11: Construction activities are to be performed in accordance with VDOT's January 1997 ***Road and Bridge Specifications.*** To reduce the impact of construction noise on the surrounding community, the contractor will be required to conform with VDOT's January 1997 ***Road and Bridge Specifications*** (§ 107.14(b.3)).

Page 13: Two 200-year old oak trees have been identified between Route 1 and Belmont Bay Drive. Tree preservation areas with fencing extending 15 meters from each of the tree trunks have been marked on the plans in an attempt to preserve these trees.

Please include the listed provisions in the contract for the project. Where appropriate, please indicate the commitments on the project plans. Thank you for your assistance.

copy: Mr. Steve Welch
Ms. Helen Cuervo
Mr. Jim Cromwell
Mr. Chris Collins
Mr. Ed Sundra

FEDERAL HIGHWAY ADMINISTRATION

FINDING OF NO SIGNIFICANT IMPACTS

FOR

ROUTE:	Route 123 (Gordon Boulevard)
LOCATION:	Prince William County, Virginia
FEDERAL PROJECT:	STP-111-1(114)
STATE PROJECT:	0123-076-F29,PE101
FROM:	0.764 Kilometers South of Existing Route 123;
TO:	0.616 Kilometers North of Existing Route 123;

The FHWA has determined that this project will not have any significant impact on the environment. This finding of no significant impact is based on the attached environmental assessment (EA) which has been independently evaluated by the FHWA and determined to adequately and accurately discuss the environmental issues and impacts of the proposed project. All significant environmental comments received as a result of the early coordination process, the public hearings, and the public and clearinghouse notification process have been considered. This EA provides sufficient evidence and analysis for determining that an Environmental Impact Statement is not required. The FHWA takes full responsibility for the accuracy, scope, and content of the attached environmental assessment.

01/04/2000
Date

Bruce Shunn
Planning and Environmental Program Manager

Subject: Rationale for Finding of No Significant Impact;
Route 123 (Gordon Boulevard) at Route 1;
Prince William County;
Environmental Assessment;

To: File through Bruce Turner and Chris Lawson

From: Edward Sundra, Environmental Specialist, Sr.
December 22, 1999

I have reviewed VDOT's October 5, 1999, submittal of the Environmental Assessment and request for a Finding of No Significant Impact (FONSI) for the subject project (the EA was withdrawn by VDOT in October and resubmitted on December 14, 1999). The project involves the construction of a grade-separated interchange at Route 123 and Route 1. More specifically, VDOT is proposing to construct a partial cloverleaf interchange with a loop ramp in the northwest quadrant, realign Route 1 through the project area, and increase the intersection spacing of Express Drive along Route 123. Based on my review, I have determined that NEPA and all other applicable Federal environmental requirements have been adequately addressed and have concluded that the project will not have any significant environmental impacts. All horizontal and vertical configurations will be consistent with current American Association of State Highway and Transportation Officials' (AASHTO) standards.

The purpose and need for the project is to improve traffic flow, improve safety, and address future traffic demand resulting from planned development in the area. The proposed interchange project will accomplish this by improving the free flow of traffic, increasing capacity, and reducing congestion in the project area. The Route 123/Route 1 intersection currently operates at level of service E during peak periods, and the daily service volume for both Route 1 and 123 was exceeded years ago. In turn, these congested conditions have resulted in numerous rear end and angle accidents near the intersection. The termini for the project are considered logical, and the project has independent utility. Construction of the project constitutes a reasonable expenditure even if no additional improvements are made. The proposed project will not restrict consideration of other foreseeable transportation improvements in the area. The design of the Route 123/Route 1 interchange will be consistent with the recommendations contained in the Route 1 Corridor Study.

Eight alternatives were considered in the development of the environmental document including a no-build alternative. The build alternatives consisted of urban diamond, compressed diamond, and partial cloverleaf interchange designs. An at-grade intersection alternative was also considered. On February 18, 1999, the Commonwealth Transportation Board selected alternative 3A, a partial cloverleaf design, as the preferred alternative.

The following social and environmental impacts were identified in the Environmental Assessment:

- The project will not displace any residents, farms, or non-profit organizations. There will be, however, approximately 22 business displacements because much of the surrounding area consists of commercial development. There is suitable replacement commercial property in the vicinity of the project should the impacted businesses wish to rebuild. Displacement of these businesses will not result in a disruptive effect on the general community since businesses similar to many of those being displaced are located up and down the Route 1 corridor.

- The project will not disproportionately impact any minority or low-income populations.

- The project will have no effect of historic resources. No structures 50 years or older were identified within the area of potential effect. Because the area has been heavily developed, it does not contain any undisturbed deposits. Therefore, there is no potential for the presence of intact archaeological deposits.

- The project will not require the use of any property protected under Section 4(f) of the 1966 Department of Transportation Act. The Belmont Golf Course and Mason Neck Wildlife Refuge are located well outside the project area and will not experience any project impacts.

- Because of the extensive development in the project area, there is no farmland in the vicinity of the project. Therefore, the project will not impact any prime agricultural areas or unique farmlands.

- Coordination with the Virginia Department of Agriculture and Consumer Services revealed that no listed threatened or endangered plant or insect species are located in the project area. Coordination with the Virginia Department of Conservation and Recreation revealed that a bald eagle nest was located in the vicinity of the project, but because of the distance to the resource, they did not anticipate any impact. No other listed threatened or endangered animal species are located in the vicinity of the project.

- VDOT does not anticipate any adverse impacts to groundwater resources.

- There is a potential for minor wetland impacts as a result of the extension of the existing culvert at Express Drive. The County will be responsible for securing the water quality permit and will be able to determine if any wetlands are impacted once detailed design is completed.

- The project was coordinated with the Virginia Department of Environmental Quality (VDEQ) for hazardous materials. VDEQ reviewed its solid waste, hazardous waste, Superfund, and current investigation data files and did not locate any apparent hazardous waste problems or past incidents in the project area. A site surface inspection identified seven parcels with hazardous material concerns that will be impacted by the preferred alternative. Four of these parcels appear to be total takes and involve three active service stations and a former service station that is now operating as a garage. Each active service station is a known leaking underground storage tank (LUST) site. Of the three remaining parcels that will be partially impacted, two are active service stations and the other is a car storage and distribution site. All three are either known or former LUST sites. Hazardous material investigations are continuing and any necessary remediation will be completed prior to construction.

- A carbon monoxide microscale analysis was conducted which showed that under the build scenario, air quality levels at the five sites modeled would be well below the National Ambient Air Quality Standards of 35 ppm and 9 ppm for the one and eight hour concentrations, respectively, and would actually slightly improve under the build scenario.

The project comes from the FY 2000-2005 transportation improvement program (TIP) and fiscally constrained long range plan for the Washington, D.C. Metropolitan Region found to

conform on December 8, 1999.

- A noise analysis was conducted which revealed that one site representing six residential properties will experience noise impacts that approach or exceed the Noise Abatement Criteria. Based on a preliminary analysis, a cost effective barrier can not be constructed to protect the six properties. A barrier constructed at this location would require the displacement of two of the six impacted properties reducing its cost-effectiveness even more.

A Citizen's Information Meeting was held on November 24, 1997, and a Location Public Hearing was held on July 16, 1998. Comments were submitted by 23 citizens at the public hearing. Of the comments received, only a few dealt with any environmental issues and that issue was noise. The noise analysis has adequately addressed the issue and comments raised. All pertinent comments have been summarized and addressed in the Environmental Assessment.

Based on the information contained in the Environmental Assessment and other supporting documentation, I have concluded that the proposed project will not have any significant impact on the environment, either individually or cumulatively. Therefore, an EIS is not warranted and the Finding of No Significant Impact has been recommended accordingly.

Edward Sundra
December 21, 1999

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN RESOURCE CENTER

ENVIRONMENTAL ASSESSMENT

ROUTE 123; GORDON BOULEVARD

PRINCE WILLIAM COUNTY

STATE PROJECT: 0123-076-F29, PE101

CONSTRUCT INTERCHANGE AT INTERSECTION OF ROUTE 123 AND ROUTE 1

FROM: 0.764 KILOMETERS SOUTH OF EXISTING ROUTE 123

TO: 0.616 KILOMETERS NORTH OF EXISTING ROUTE 123

FEDERAL PROJECT: STP-111-1 (114)

This statement prepared by

Brennan B. Snyder
Environmental Engineer

ENVIRONMENTAL DIVISION
VIRGINIA DEPARTMENT OF TRANSPORTATION

SUBMITTED PURSUANT TO 42 U.S.C. 4332(2)(C)

10-6-99
Date

C. F. J. FOR
J. G. Browder, Chief Engineer

ENVIRONMENTAL ASSESSMENT
ROUTE 123 INTERCHANGE WITH ROUTE 1
PRINCE WILLIAM COUNTY

PROJECT DESCRIPTION

The interchange between Route 123 (Gordon Boulevard) and Route 1 (Jefferson Davis Highway) is located in the eastern portion of Prince William County, just east of the Route 123 interchange with Interstate 95 (I-95). The general location of the project is shown in Figure 1. Figure 2 is a project vicinity map showing the project location and surrounding area.

The scope of the proposed project involves the construction of a grade separated interchange to replace the existing congested signalized intersection at the junction of Route 1 and Route 123 in Woodbridge. The existing roadways are both four lane undivided sections. This project includes widening Route 1 to six 3.6 meter (12 foot) lanes and improving Route 123 with four 3.6 meter (12 foot) lanes. Both will be separated by a median of various widths from 2.4 - 4.2 meters (8 – 14 feet).

Express Drive, in nearby Belmont Bay, will be relocated and will include two 3.6 meter (12 foot) lanes on an undivided section with sidewalks on both sides of the roadway. A sidewalk and bicycle trail will be constructed alongside Routes 1 and 123. A shared bicycle/automobile travel lane on the outside lane of each direction along Route 1 is being evaluated by the Department and Prince William County.

Seven alternative alignments and a no build alternative were evaluated during the preparation of the Draft Environmental Assessment. All eight alternatives were presented at the Location Public Hearing, held on July 16, 1998. On February 18, 1999, the Commonwealth Transportation Board (CTB) selected Alternative 3A, a partial cloverleaf, for the final design of this project.

The geometric design of this project is in compliance with the American Association of State Highway and Transportation Officials (AASHTO) standards.

PURPOSE AND NEED FOR THE PROJECT

The purpose of the project is to improve the flow of traffic, reduce accidents, and support traffic demand from the planned development in the area.

Capacity and Transportation Demand

Route 1, functionally classified as a major principal arterial, is a 4-lane undivided facility in the project vicinity with a posted speed of 56 km/h (35 mph). Route 123, also functionally classified as a major principal arterial, is a 4-lane divided facility within the project vicinity with a posted speed limit of 56 km/h (35 mph). This project will ease congestion and provide increased capacity along the north-south Route 1 corridor by replacing the present signal-controlled at-grade intersection of

Route 1 and Route 123 with a grade separated interchange. This interchange will permit traffic on Route 1 to flow without interruption past Route 123.

The Department has computed a "daily service volume" (DSV) for most segments of the Commonwealth's roads. This volume, which is based on the geometrics of the existing roadway (pavement widths, shoulders, radius of curve, limits of sight distance, etc.), represents the acceptable traffic volume for that segment of the roadway based on its existing conditions. By comparing the calculated DSV with measured average daily traffic (ADT), transportation planners are given advance indication of the need for capacity improvements. The DSV for Route 1 in the vicinity of the proposed interchange is 35,000 vehicles per day (VPD). For Route 123, the DSV has been computed as 32,500 VPD. As can be seen from the ADT data on Table 1, the DSV for Route 1 was exceeded years ago, substantiating the need for capacity improvements as well as demonstrating the volume of traffic crossing the existing intersection. A study was conducted in 1993 by a consultant for a new development in the vicinity of the intersection. This study found that the intersection of Route 1 and Route 123 was operating at level of service (LOS) E during both the AM and the PM peak hours and needed improvements.

The Route 1 Corridor Study from the Stafford County line to Interstate 495 was recently completed. This study has identified a recommended concept, or set of transportation improvements for the corridor. There are four key features to the recommended concept, including highway design, mass transit, streetscaping, and economics. All design plans for the Route 1/Route 123 intersection will meet these recommendations established in the Route 1 Corridor Study.

Social Demands/Economic Development

The Metropolitan Washington Council of Governments (MWCOG) Round 5.3 forecasts indicate a dramatic growth by 2020 in both population (89% increase over 1990 to 474,279) and employment (121% increase-from 84,422 to 186,981 jobs in the County). Because of land availability and lower housing prices than neighboring Fairfax County, Prince William County continues to experience strong residential development. Ongoing development in the project vicinity includes the mixed use Belmont Center Development. Current zoning for the Belmont Center allows for approximately 1,548 residential units and non-residential development of approximately 204,406 square meters (2.2 million square feet) of gross floor area.

Land use along the project's limits, both existing and planned in the County Comprehensive Plan, is generally commercial and retail uses (regional commercial center and regional employment center) and low density residential. The Route 1 corridor has been identified as a future Sector Plan study area. A mixture of fast food restaurants and commercial uses (motels, shopping centers, and gas stations) abuts Route 1 on the west side. Development along the east side of Route 1 is chiefly commercial.

Safety

A summary of the accident data (from 1992 to 1996) within 76.2 meters (250 feet) of the Route 1/Route 123 intersection is provided in Table 2. As can be seen, most of the accidents have been

rear end and angle collisions on dry pavement during daylight hours, with driver inattention being the predominant cause as determined by the investigating police officer. This is indicative of present congested conditions. The review of the accident records revealed that the accidents are relatively evenly distributed throughout the days of the week with a maximum of 12 accidents on Thursdays followed by 11 accidents on Saturdays. The minimum number of accidents (six) was reported on Sundays. The number of accidents is distributed throughout all hours of the day. The only period with less than five accidents is from midnight to 6 AM.

The proportion of rear end and angle collisions (58 out of 67) illustrates the present safety hazard posed by the large volume of vehicles entering the intersection. The angle collisions (29 out of 67) can be attributed to the turning movements while rear end collisions (29 out of 67) can be attributed to the congestion within 76.2 meters (250 feet) of the intersection. The proposed project will separate the turning movements from through traffic and reduce congestion at the intersection, and will therefore reduce accidents and improve safety.

ALTERNATIVES CONSIDERED

In addition to the "no build" option, seven interchange alternatives were considered during the preliminary engineering of this project. Alternative 1 consisted of an urban diamond interchange design; Alternatives 2 and 4 involved a compressed diamond; and Alternatives 3, 3A, and 5 dealt with a partial cloverleaf. Other than the "no build" option, Alternative 6 was the only at-grade intersection alternative and did not provide for either a loop or exit ramp on any of the four quadrants. Instead, this alternative maintained a traffic signal and included only the construction of six lanes. While the "no build" alternative had the least cost and impact on land use, it would only have resulted in exacerbated congestion and accidents as traffic volumes increase on Route 1 and Route 123.

On February 18, 1999, the Commonwealth Transportation Board approved the interchange configuration and location for this project as it was proposed and presented at the July 16, 1998 Location Public Hearing. The selected alternative, Alternative 3A, enhances safety, supports all planned area development, and provides the increased capacity needed at the Route 1/Route 123 intersection.

The following are brief descriptions of the original candidate alternatives that were considered during the preliminary engineering phase for this project, as well as a description of the selected alternative. The alternative concepts are shown in Figures 3 through 10.

Original Candidate Alternatives

Alternative 1 - Single Point Urban Diamond

Alternative 1 is a single point urban diamond interchange with an additional (fifth) leg into the intersection. This connection of Express Drive as the fifth leg in the intersection reduces the overall efficiency of the intersection. Route 1 would be widened to three through lanes in each direction on its existing alignment. Alternative 1 is shown in Figure 3.

This alternative involves less impacts to the north side of Route 1 than the other alternatives, however access off of Route 1 to a large commercial area in the northwest quadrant is eliminated. In addition, a more extensive structure over the railroad is required to accommodate the Express Drive connection as well as Ramps A and B. The reduction in operational efficiency of the intersection results from a portion of the signal cycle, in which Express Drive would be given the green signal indication, and all other interchange movements would be stopped on red.

Alternative 2 - Compressed Diamond

Alternative 2 is a compressed diamond interchange with Express Drive being part of the fourth leg in the southeast quadrant. Ramp A provides a connection from northbound Route 1 to Express Drive. Again, Route 1 is widened to three lanes in each direction along its existing alignment. Alternative 2 is shown in Figure 4.

This alternative involves less encroachment on the railroad than Alternative 1 in the southeast quadrant, although there is a high structure cost due to the Ramp A and B bridges. In addition, the Ramp A alignment is through an area identified for a potential future parking garage for the Dawson Beach Commuter Rail Station.

Alternative 3 - Partial Cloverleaf

Alternative 3 is a partial cloverleaf interchange with a loop ramp in the northwest quadrant, a realignment of Route 1 through the project area, and increased intersection spacing of Express Drive along Route 123. This alternative also retains access off southbound Route 1 to the commercial property in the southwest quadrant. Alternative 3 is shown in Figure 5.

With the Express Drive intersection removed from interchange area, there is minimal impact to the railroad right-of-way, and therefore less bridge structure is required over the railroad. This alternative would provide the ability for new access off Route 123 to the commercial property in the southwest quadrant. However, this alternative would also result in additional right-of-way and property impacts to the northwest quadrant and the diversion of eastbound Route 123 to southbound Route 1 right turning movements onto a ramp that provides access to Route 1.

Alternative 4 - Compressed Diamond

Alternative 4 is a compressed diamond interchange which utilizes a relocation of existing Route 1, slightly to the west, to minimize encroachment on the CSX railroad property and provide additional spacing to the Route 123 intersection with Express Drive. Alternative 4 is shown in Figure 6.

This alternative involves a minimization of structural costs, minimal encroachment on CSX railroad property, and less property and right-of-way impacts than Alternatives 3 and 3A. Express Drive is also removed from the interchange. However, this alternative also eliminates access off Route 1 to commercial properties in the southwest and northwest quadrants.

Alternative 5 - Partial Cloverleaf

Alternative 5 is a partial cloverleaf interchange with a loop ramp in the southeast quadrant. This interchange configuration moves Ramp B, which provides the eastbound Route 123 to northbound Route 1 movement, from the northeast quadrant to the southeast quadrant, providing a loop ramp type of movement. Alternative 5 is shown in Figure 7.

This alternative provides increased capacity to the Dawson Beach Commuter Rail Station. It also eliminates the CSX railroad encroachment in the east quadrant, however requires additional encroachment in the southeast quadrant. In addition, two more ramp bridge structures (for Ramps A and B) are required.

Alternative 6 - At-Grade Intersection

Alternative 6 is essentially the no build alternative in this design study, with the inclusion of widening Route 1 as proposed by the recent Route 1 Corridor Study for Prince William and Fairfax Counties. This alternative provides additional through capacity and minimizes right of way impacts on Route 1, but does not take into account the ultimate capacity requirements of the Route 1/Route 123 intersection and thus the intersection operation fails in ultimate condition. In addition, neither the proposed extension of Route 123 into the Belmont Bay Development east of Route 1 nor the future access requirements at the Dawson Beach Commuter Rail Station are addressed. Alternative 6 is shown in Figure 8.

Alternative 7 - No Build

Alternative 7 is the "no build" alternative. This alternative would leave the existing intersection as it is with no improvements to Route 1 or Route 123. This alternative involves no right-of-way impacts, but the intersection remains in operational failure. In addition, no extension of Route 123 east of Route 1, along with additional access to Dawson Beach Commuter Rail Station is provided. There will also be no additional capacity on Route 1. Alternative 7 is shown in Figure 9.

Selected Alternative

Alternative 3A - Partial Cloverleaf

Alternative 3A is a partial cloverleaf interchange with a loop ramp in the northwest quadrant, a realignment of Route 1 through the project area, and increased intersection spacing of Express Drive along Route 123. This alternative also retains access off southbound Route 1 to the commercial property in the southwest quadrant. Alternative 3A provides an additional ramp in the southwest quadrant (Ramp E) which allows the eastbound Route 123 to southbound Route 1 movement without requiring a left turn off eastbound Route 123 onto the loop ramp. The selected alternative is shown in Figure 10.

With the Express Drive intersection removed from interchange area, there is minimal impact to the railroad right-of-way, and therefore less bridge structure is required over the railroad. This alternative provides access to the commercial property in the southwest quadrant off of Route 1 via a ramp from eastbound Route 123, as well as allows for the ability to construct new access directly off Route 123 to the same commercial property. This alternative, however, results in additional right-of-way and property impacts in the northwest quadrant.

ENVIRONMENTAL CONSEQUENCES

In the process of developing this document, federal, state and local agencies and individuals were contacted to obtain information regarding the potential impacts of the proposed project. Based on comments received from these contacts, the project appears to have no significant environmental impacts. This document has been prepared in accordance with the Federal Highway Administration regulations (23 CFR 771). The public had the opportunity to review the draft document and attend a location public hearing on this project. This Final Environmental Assessment addresses comments received from the location public hearing. The citizens will also be able to review this final document, and if approved, the Finding of No Significant Impact (FONSI) at the design public hearing scheduled for November 1999.

Socioeconomic Impacts

An interchange at the project location will provide more direct access to the area east of Route 1 and to the Woodbridge commuter rail station. This is one of four quality development areas targeted by the County for economic development and employment opportunities. The area contains the mixed-use Belmont project and the future Woodbridge Wildlife Refuge.

The proposed interchange will be very close to heavily traveled railroad tracks. The Virginia Railway Express, Amtrak, and CSX freight trains all use these tracks, and rail services must be maintained during construction. The construction of ramps should allow space for the ultimate construction of three railroad tracks.

The selected alternative does not require a relocation of the existing CSX railroad line through the project area. Railroad relocation were avoided for the following reasons: the construction cost of rail line relocation; the costs associated with impacts to the existing Dawson Beach Commuter Rail Station; the potential impacts to, or disruption of service during rail line relocation or Commuter Rail Station modifications; impacts to the existing gas line parallel to the existing rail line; and the proximity to the bridge crossing over the Occoquan River.

Right of Way/Relocations

The interchange project will only have minor effects upon the Woodbridge/Occoquan and Prince William County residents, however the immediate commercial neighborhood will be affected as most of the adjacent properties will need to be acquired. There will be no families displaced by the selected alternative. There are no known handicapped or elderly owned or occupied

businesses being displaced by the selected alternative. There are no farms or non-profit organizations being displaced. The Department has no knowledge of any federal or community programs currently planned for this commercial area of Prince William County.

An inspection of the proposed project and surrounding commercial area of the Route 1 corridor of Prince William County indicates there are replacement properties for sale or rent on the open real estate market. It is anticipated that the majority of the affected commercial properties could find adequate replacement commercial properties, both improved and unimproved, to relocate their businesses.

All right of way negotiations and relocations will be performed by Prince William County. Any required relocations of commercial businesses will be accomplished in an orderly and satisfactory manner. Very close contact and constant monitoring of the real estate market, both rental and sales, will be required throughout the relocation process. There is the possibility that some of the displaced businesses will want to construct a replacement facility or building. This would require coordination and the establishment of a working relationship with the displacee and the relocation agent and/or the Department.

There are 51 properties that will be impacted by the selected alternative. According to the Field Inspection stage plans, the total amount of property to be acquired is 8.13 hectares (20.09 acres), with 1.10 hectares (2.71 acres) necessary for temporary construction easements. There are 22 properties which are considered complete takes, amounting to a total of 5.85 hectares (14.45 acres). Table 3 shows the details associated with each parcel.

Impacted properties and businesses include, but are not limited to: CSX Railroad, Virginia Concrete, Inns of Virginia, Texaco, Gordon Plaza, Lowes Contractor Yard, Taco Bell, Woodbridge Shopping Center, Dunnivin's Corner, Station Plaza, West Marine, Crestar Bank, Amoco, Exxon, Cowles Ford Auto Sales, Roy Rogers, Dunkin Donuts, and Woodbridge Auto Sales.

Environmental Justice

Executive Order 12898, issued on February 11, 1994, mandates Federal agencies to accomplish environmental justice as part of their overall mission, by identifying and addressing as appropriate, disproportionately high and adverse human health or environmental effects of its activities on minority or low income populations to the greatest extent practicable.

The proposed project does not disproportionately affect any identifiable minority or low income populations. The selected alternative will not cause a divisive or disruptive effect on the general community served.

Historic/Archaeological Resources

The Department evaluated the proposed project area and examined a "worst case" (full cloverleaf) footprint for historic/archaeological resources. No structures over 50 years of age or

older were identified within the area of potential effects, nor was there any potential for intact archaeological deposits. This area has been heavily developed and does not contain any undisturbed deposits. The Department of Historic Resources concurred with the Department that this undertaking will have no effect on historic properties on January 7, 1998.

Should any archaeological sites be found during construction, the contractor shall follow the guidelines outlined in VDOT's January 1997 **Road and Bridge Specifications** (§107.14(d)) regarding the discovery of archaeological sites.

Agricultural/Ecological/Recreational Resources

No significant adverse impacts are anticipated on agricultural, ecological, or recreational resources. The United States Department of Agriculture, Natural Resources Conservation Service (NRCS) stated that there are no existing or proposed agricultural and/or forestal districts within the project area, and that the form AD-1006 was not required because of prior conversion of the site. This project will not impact any streams on the National Park Service Nationwide Inventory, Final List of Rivers, or any potential State Scenic Rivers. There will be no open space easements affected by this project.

This project will not require the acquisition of any Title 49 U.S.C. Section 303(c) lands. There are no existing recreational facilities, public or private, adjacent to the planned construction. Coordination with the Virginia Department of Conservation and Recreation and the Northern Virginia Regional Park Authority indicated that the project would not impact any existing or planned parks or recreational facilities.

The Belmont Golf Course lies to the northeast of the proposed interchange but will not be impacted by the proposed project.

There will be no impacts to the Mason Neck Wildlife Refuge and the future Woodbridge Wildlife Center, which are located southeast of the project.

Wildlife/Endangered Species

The Virginia Department of Agriculture and Consumer Services (DACS) has indicated that no listed threatened or endangered plant or insect species have been documented in the project area.

The Department of Conservation and Recreation (DCR) indicated that they searched their Biological and Conservation Data System (BCD) for occurrences of natural heritage resources and found that a bald eagle nest (Haliaeetus leucocephalus) was documented in the project vicinity. DCR stated that due to the distance to the resource, they do not anticipate that this occurrence of the bald eagle will be impacted by the proposed project.

VDOT's Wildlife Biologist has also reviewed this project and has indicated that this project will have no impact on threatened or endangered species.

Physiography/Soils

VDOT will implement and maintain strict erosion and sedimentation controls in accordance with the Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation's 1992 **Virginia Erosion and Sediment Control Manual**, third edition, and VDOT's January 1997 **Road and Bridge Specifications** (§107.14 (a) and §303.03). On-site inspections will ensure compliance with contract provisions and proper environmental practices.

Aquatic Resources

Hydrogeology/Groundwater Quality

The project should have no effect on groundwater resources. The Department does not anticipate any detrimental impacts or effects on groundwater as a result of this project. It is possible, however, that pollutants may be introduced into the groundwater as a result of runoff from the highway during construction, wintertime deicing salts, or accidental spills.

To minimize these impacts, disturbed areas will be revegetated in a timely manner to minimize impacts to potential groundwater recharge areas. Construction equipment leaks, material storage areas, and on-site maintenance and fueling activities shall be regulated to ensure compliance with the erosion control provisions and sound environmental practices as indicated in VDOT's January 1997 **Road and Bridge Specifications** (§107.14 (b)(1)).

The Department will further minimize the potential for groundwater contamination by applying the recommendations suggested in the **Best Management Practices Handbook: Sources Affecting Groundwater** (Department of Environmental Quality, Water Division, formerly the State Water Control Board, 1979).

Surface Water

This project is located in the Potomac-Shenandoah River Basin, Potomac River Sub-basin. Within this basin, the project is in the Occoquan Watershed. There are two intermittent drainages within the project area. The first is located in the vicinity of the Route 1 and Route 123 intersection. Currently, this drainage is piped under the intersection and discharges in the vicinity of the railroad tracks found east of Route 1. A new culvert is proposed to carry this drainage under the railroad tracks. On the east side of the tracks, the tributary flows south, and runs along and under Express Drive in a culvert. The existing culvert under Express Drive will be replaced and enlarged.

The second drainage is located approximately 290 meters (950 feet) south of Route 123. A new pipe will be constructed to carry the water from Route 1, which will outfall just west of the railroad tracks. An existing pipe will then carry the drainage under the railroad tracks, and onto the VRE property in an existing drainage swale.

No public water supplies will be impacted by this project. There will be no adverse effects on flooding as a result of the proposed project.

Wetlands

For the purpose of regulation, wetlands are defined as areas that are inundated or saturated by surface or groundwater at the frequency and duration sufficient to support, and that under normal conditions do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, bogs, and similar areas. Wetland determinations are made using the U.S. Army Corps of Engineers Wetland Delineation Manual, Technical Report Y-87-1 (January 1987).

There is the potential for minor wetland impacts as a result of the extension of the existing culvert at Express Drive. The water quality permit applicant, Prince William County, should conduct further investigation after detailed plans become available to determine if wetlands are present and if so, whether they will be impacted.

Permits

All applicable water quality permits will be obtained from the U. S. Army Corps of Engineers, the Virginia Marine Resource Commission, and the Department of Environmental Quality-Water Division in compliance with Section 401 and 404 of the Clean Water Act. This project will be coordinated for water quality permits by the County, as they will be responsible for the construction of the project.

On-site Hazardous Wastes/Pollutants

The Department of Environmental Quality Waste Division reviewed its solid waste, hazardous waste, Superfund, and current investigation data files, and did not locate any apparent hazardous waste problems or past incidents at the project site.

The Department has reviewed the field inspection design plans for the subject project. A site surface inspection and walk-through was conducted. For certain properties, records at the Virginia Department of Environmental Quality (DEQ) were also reviewed. Seven parcels were identified with potential hazardous materials concerns for the selected alternative, including four gasoline stations and two car repair facilities.

Subsurface investigations (i.e. soil/groundwater sampling, magnetic survey, etc.) have been recommended for the seven parcels. The field inspection plans suggest that four parcels will most likely be total takes. One parcel is a busy garage that was reportedly a service station; three others are active service stations. Each service station is a known leaking underground storage tank (LUST) site. Portions of three additional parcels will also be taken. Two are service stations and known LUST sites. The third parcel is a car storage, distribution, and former LUST site.

Hazardous materials investigations, personal interviews, and access right negotiations are continuing. Any necessary remediation will be completed prior to construction.

Air Quality

The Air Quality Analysis performed by the Department on the selected alternative is attached to this document (Appendix B). The proposed project is not expected to be a major source of air pollution. The project is located in an area which is designated nonattainment for ozone. The project comes from both a Transportation Plan and a Transportation Improvement Program found to conform with the State Implementation Plan.

The temporary air quality impacts from construction are not expected to be significant. Construction activities are to be performed in accordance with the Department's 1997 **Road and Bridge Specifications**. These Specifications are approved as conforming with the SIP and require compliance with all applicable local, state, and federal regulation. The project is not expected to interfere with the attainment or maintenance of the National Ambient Air Quality Standards (NAAQS).

Noise Impacts

Traffic Noise

The Noise Impact Analysis Technical Study performed by the Department on the selected alternative is attached to this document (Appendix C). The possibility of sound barriers was considered as part of this study. One barrier was found to be feasible, but not reasonable, in that the cost per protected and benefited site was $84,900, which exceeds the $30,000 limit. This barrier will only be given further consideration if third party funding becomes available to supplement the additional costs.

Construction Noise

Land uses that will be sensitive to traffic noise will also be sensitive to construction noise. A method of controlling construction noise is to establish the maximum level of noise that construction operations can generate. In view of this, VDOT has developed and FHWA has approved a specification that establishes construction noise limits. This specification can be found in VDOT's January 1997 **Road and Bridge Specifications** (§107.14 (b.3)). The contractor will be required to conform to this specification to reduce the impact of construction noise on the surrounding community.

COORDINATION

This document was written with information from the following agencies, non-profit organizations, and individuals:

Federal

United States Army Corps of Engineers
United States Department of Agriculture, Natural Resources Conservation Service
United States Fish and Wildlife Service

Regional

Northern Virginia Planning District Commission
Northern Virginia Regional Park Authority

Commonwealth of Virginia

Chesapeake Bay Local Assistance Department
Department of Agriculture and Consumer Services
- Division of Plant and Pest Services

Department of Conservation and Recreation
- Division of Natural Heritage
- Division of Policy, Planning and Recreation Resources
- Division of Soil and Water Conservation
- Division of State Parks

Department of Environmental Quality
- Air Operations
- Waste Operations, Office of Technical Assistance
- Water Operations, Water Permit Support

Department of Forestry
Department of Game and Inland Fisheries
Department of Health
- Office of Water Programs, Division of Wastewater Engineering

Department of Historic Resources
Department of Mines, Minerals, and Energy
- Division of Mineral Resources

Marine Resource Commission
Museum of Natural History
Outdoors Foundation
Department of Rail and Public Transportation
Department of Transportation

Local

County of Prince William
- County Executive
- Health Department
- Historic Commission
- Office of Housing and Community Development
- Park Authority
- Office of Planning, Transportation Planning Branch
- Public Schools
- Department of Public Works, Transportation Division
- Service Authority

Appendix A

Tables and Figures

PROJECT VICINITY AVERAGE DAILY TRAFFIC VOLUME

(US 1 in the vicinity of VA 123)

Roadway Segment From - To	1991	1992(1)	1993	1994(2)	1995	Estimated 2020
Rt. 610 N. of Garfield - Rt. 618 *	30,000	--	--	--	--	--
Rt. 642 - Fairfax County line *	--	34,000	40,000	--	--	--
Rt. 2000 - Fairfax County line *	--	--	--	42,000	43,000	--
Rt. 253 - Rt. 123 **	--	--	--	--	37,900	72,600

Notes:

(1) Change in segments used for computing the Average Daily Traffic Volume (ADT).

(2) Change in segments used for computing the Average Daily Traffic Volume

* Average Daily Traffic Volume data from the annual "Primary Road Counts" published by VDOT

** 1995 Average Daily Traffic Volume and 2020 estimated Average Daily Traffic Volume from the US 1 and VA 123 traffic forecast study by VDOTdated February, 1996. The 1995 ADT is based on ground counts.

Table 1
Daily Service Volume

PROJECT VICINITY AVERAGE DAILY TRAFFIC VOLUME

(VA 123 in the US 1 vicinity)

Roadway Segment From - To	1991	1992	1993	1994	1995	Estimated 2020
Rt. 1 Woodbridge - I-95 *	24,000	24,000	25,000	26,000	27,000	--
Rt. 1 Woodbridge - VA 639 **	---	---	---	---	18,350	59,100

Notes:

* Average Daily Traffic Volume (ADT) data from the annual "Primary Road Counts" published by VDOT

** 1995 Average Daily Traffic Volume and 2020 estimated Average Daily Traffic Volume from the US 1 and VA 123 traffic forecast study by VDOTdated February, 1996. The 1995 ADT is based on ground counts.

Table 1-continued
Daily Service Volume

US 1 ACCIDENT DATA

(Within 250 feet of VA 123 intersection)

	1992	1993	1994	1995	1996	Total
Total annual accidents	**15**	**12**	**13**	**13**	**14**	**67**
Accidents involving fatalities	0	0	0	0	0	0
Accidents involving injuries	5	4	4	9	8	30
Property damage accidents	10	8	9	4	6	37
Property damage (estimated)	$59,100	$31,450	$45,710	$95,320	$55,650	$2,87,230
Breakout by environmental aspects						
Daylight (incl. dawn and dusk)	12	10	9	10	11	52
Dry pavement conditions	10	8	11	12	10	51
Breakout by type of collision						
Rear end collision						29
Angle collision						29
Head-on collision						0
Sideswipe (same direction)						5
Sideswipe (opposite direction)						0
Struck fixed object in roadway						0
Struck fixed object off roadway						2
Struck pedestrian						1
Backed into						1
Miscellaneous (non-collision or not stated)						0
Police determination of cause						
Driver inattention						49
Speeding						3
Driver under influence						2
Pavement conditions						5
Vehicle defective						1
Miscellaneous						7

Table 2
Route 1 Accident Data

Table 3. Right of Way Acquisition according to Field Inspection Stage Plans

PARCEL	TOTAL AREA (ACRES)	PROPERTY TAKE (ACRES)	TEMPORARY EASEMENT TAKE (ACRES)	BUSINESS NAME	ZONING	USE
1	The exact area of railroad owned property is not known.	1.2881	1.0725	CSX Railroad	B-1	Railroad
13	4.6083	0.6533	--		*	
14	0.6055	0.0517	--		PMD	
15	2.9102	0.0021	--		M-1	
16	0.176	0.176	--		B-1	Open Lot
17	0.1495	0.1495	--		B-1	Palm Reader
18	0.1392	0.1392	--		B-1	
19	0.665	0.665	--		B-1	
20	0.198	0.198	--		B-1	
21	0.1267	0.1267	--		B-1	
22	0.0915	0.0915	--		B-1	
23	0.0584	0.0584	--		B-1	
24	12.2826	0.0863	0.2654	Virginia Concrete	M-1	Industrial
25	1.7558	--	0.0001	Virginia Concrete	M-1	Industrial
27	0.936	0.1177	0.022	Inns of Virginia	B-1	Hotel
28	0.9656	0.9656	--	Texaco	B-1	Gas Station
29	1.1658	1.1658	--		B-1	
31	0.7208	0.7208	--		B-1	
32	0.5491	0.5491	--		B-1	
33	0.4598	0.4598	--		B-1	
34	0.4656	0.4656	--		B-1	
35	3.7845	3.7845	--	Lowes Contractor Yard	B-1	Retail Store
36	18.2239	0.9023	0.2524	Gordon Plaza	MIXED	Shopping Mall
37	0.606	0.606	--		B-1	
38	0.6188	0.6188	--		B-1	
39	1.149	1.149	--		B-1	Hotel
40	0.3994	0.3994	--	Taco Bell	*	Restaurant
41	5.0028	0.0391	0.0578	Woodbridge Shopping Center	B-1	Shopping Mall
42	0.6372	0.0512	0.0229	Dunnivin's Corner	B-1	
43	0.4732	0.0152	0.0102		B-1	
44	11.11	0.4845	0.4062	Station Plaza	B-1	Shopping Mall
45	0.6085	0.0904	0.0225	West Marine	B-1	Retail Store
46	0.5739	0.0045	0.0151	Crestar Bank	B-1	Bank
47	0.7553	0.7553	--	Amoco	B-1	Gas Station
49	0.5165	0.5165	--	Amoco	B-1	Gas Station
50	2.722	0.7625	0.1224		B-1	
51	0.6868	0.6868	--	Exxon	B-1	Gas Station
52	6.4757	0.1409	0.0095		B-1	
53	0.7382	0.0559	0.0787		B-1	Open Lot

PARCEL	TOTAL AREA (ACRES)	PROPERTY TAKE (ACRES)	TEMPORARY EASEMENT TAKE (ACRES)	BUSINESS NAME	ZONING	USE
54	0.4117	0.1657	0.012		B-1	
55	0.8955	0.231	0.0297	Cowles Ford Auto Sales	B-1	Auto Sales
56	1.2799	0.0433	0.0751	Roy Rogers	B-1	Restaurant
58	1.8009	0.0157	--		R-10	
59	0.8713	0.0382	0.0459	Dunkin Donuts	B-1	Restaurant
60	1.6558	0.0037	0.0332	Woodbridge Auto Sales	B-1	Auto Sales
61	0.3074	0.0269	0.0463		B-1	Auto Sales
62	0.1791	--	0.003		B-1	Auto Sales
71	0.4228	0.2163	0.0283		B-1	Auto Sales
72	0.3716	0.0854	0.0304		B-1	Auto Sales
74	0.214	0.0297	0.0176		B-1	Auto Sales
75	0.1522	0.0403	0.0284		B-1	Auto Sales

TOTAL:

51	92.6733	20.0892	2.7076

= Complete Property Take

COMMONWEALTH OF VIRGINIA

DEPARTMENT OF TRANSPORTATION

ENVIRONMENTAL DIVISION

GENERAL LOCATION MAP

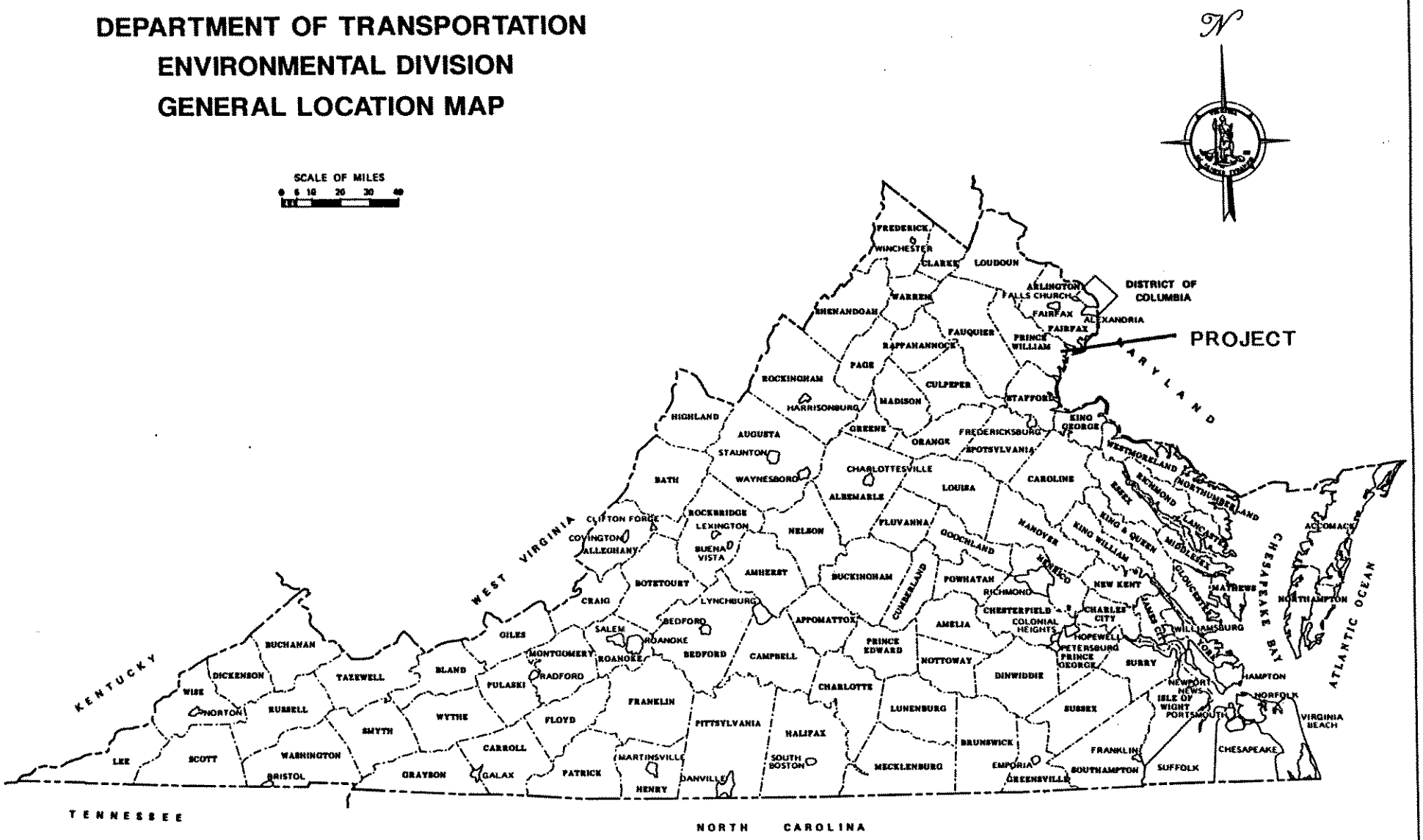


Figure 1
General Vicinity Map
Project 0123-076-F29, PE101,C501

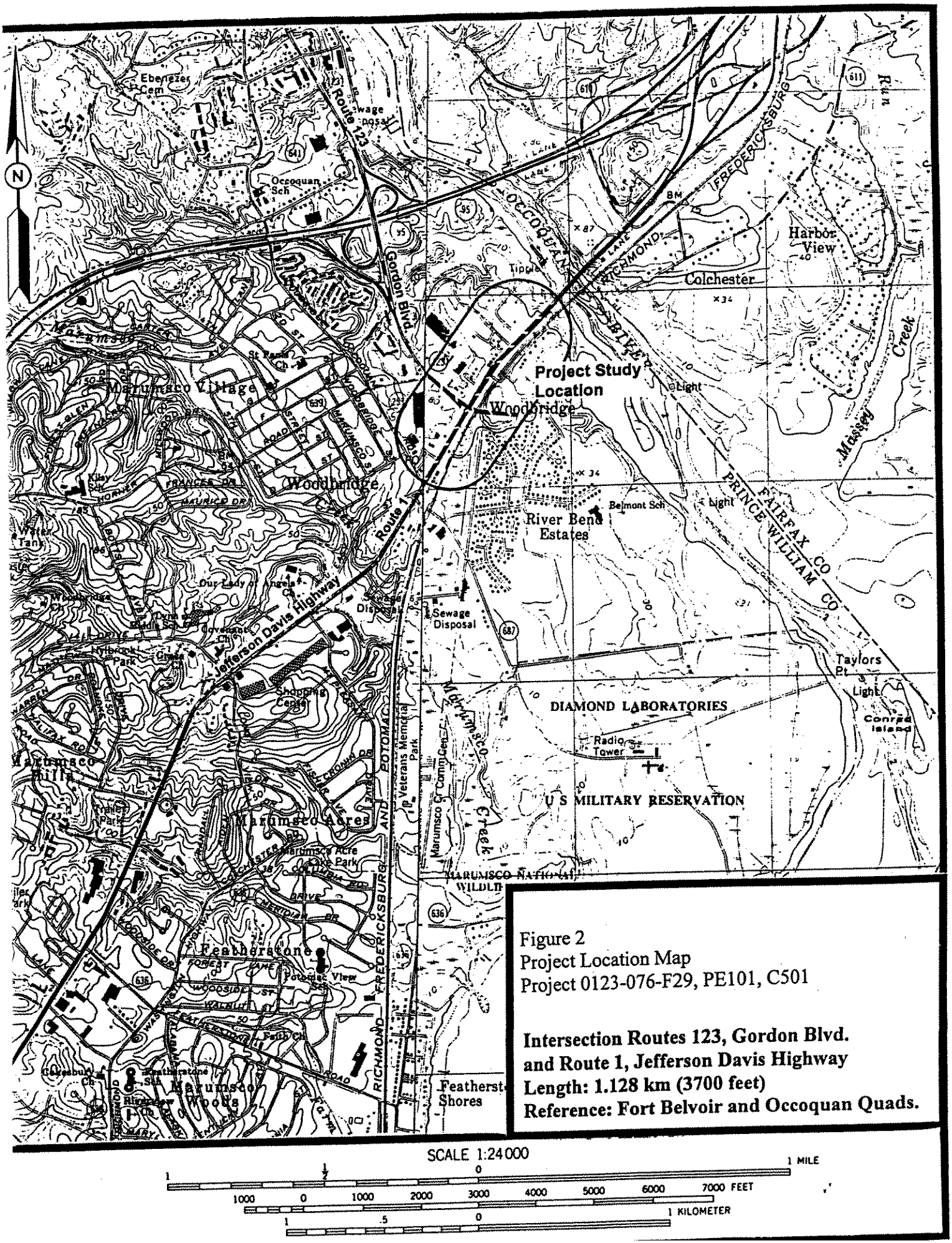


Figure 2
Project Location Map
Project 0123-076-F29, PE101, C501

Intersection Routes 123, Gordon Blvd. and Route 1, Jefferson Davis Highway
Length: 1.128 km (3700 feet)
Reference: Fort Belvoir and Occoquan Quads.

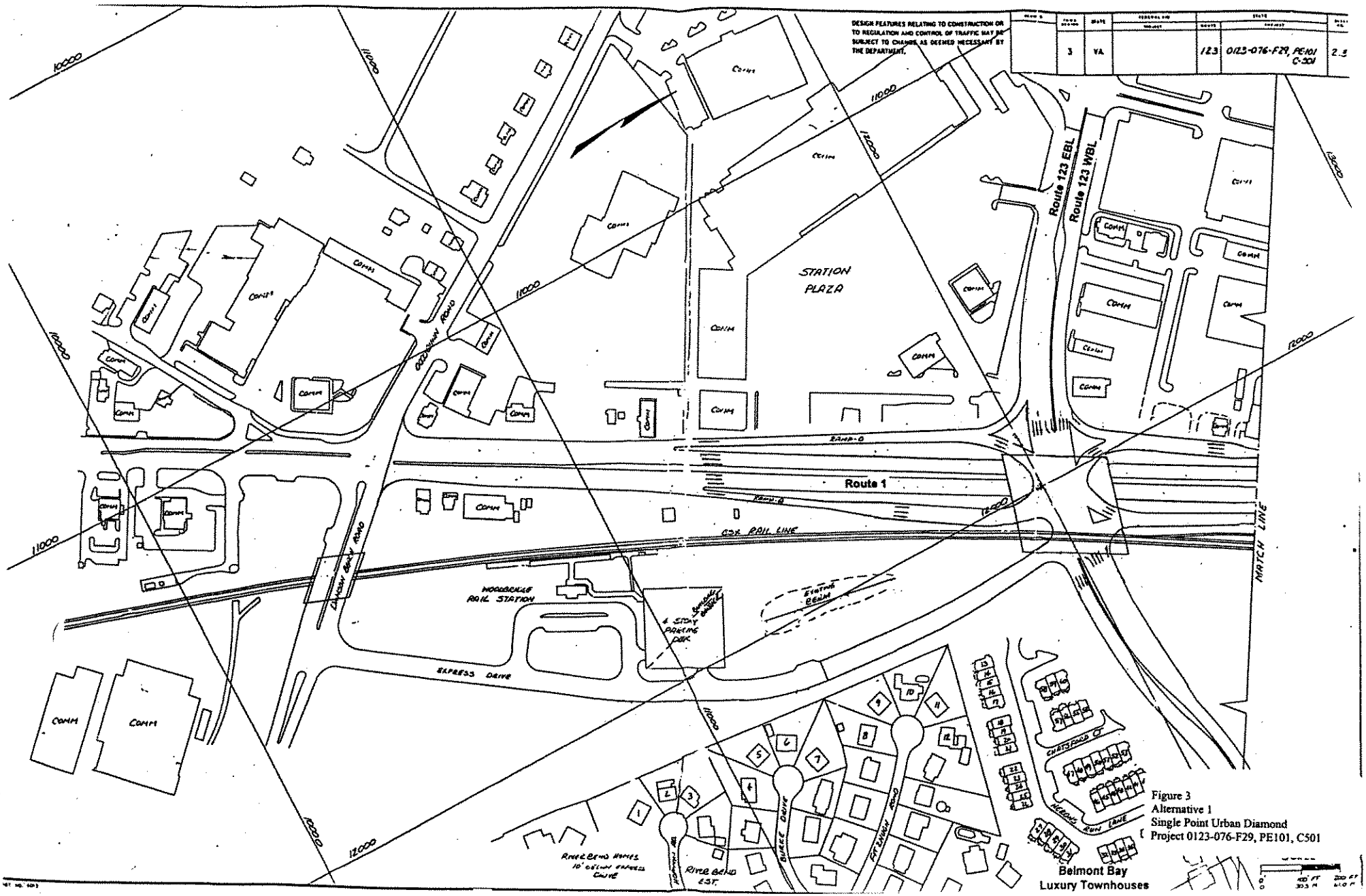


Figure 3
Alternative 1
Single Point Urban Diamond
Project 0123-076-F29, PE101, C501

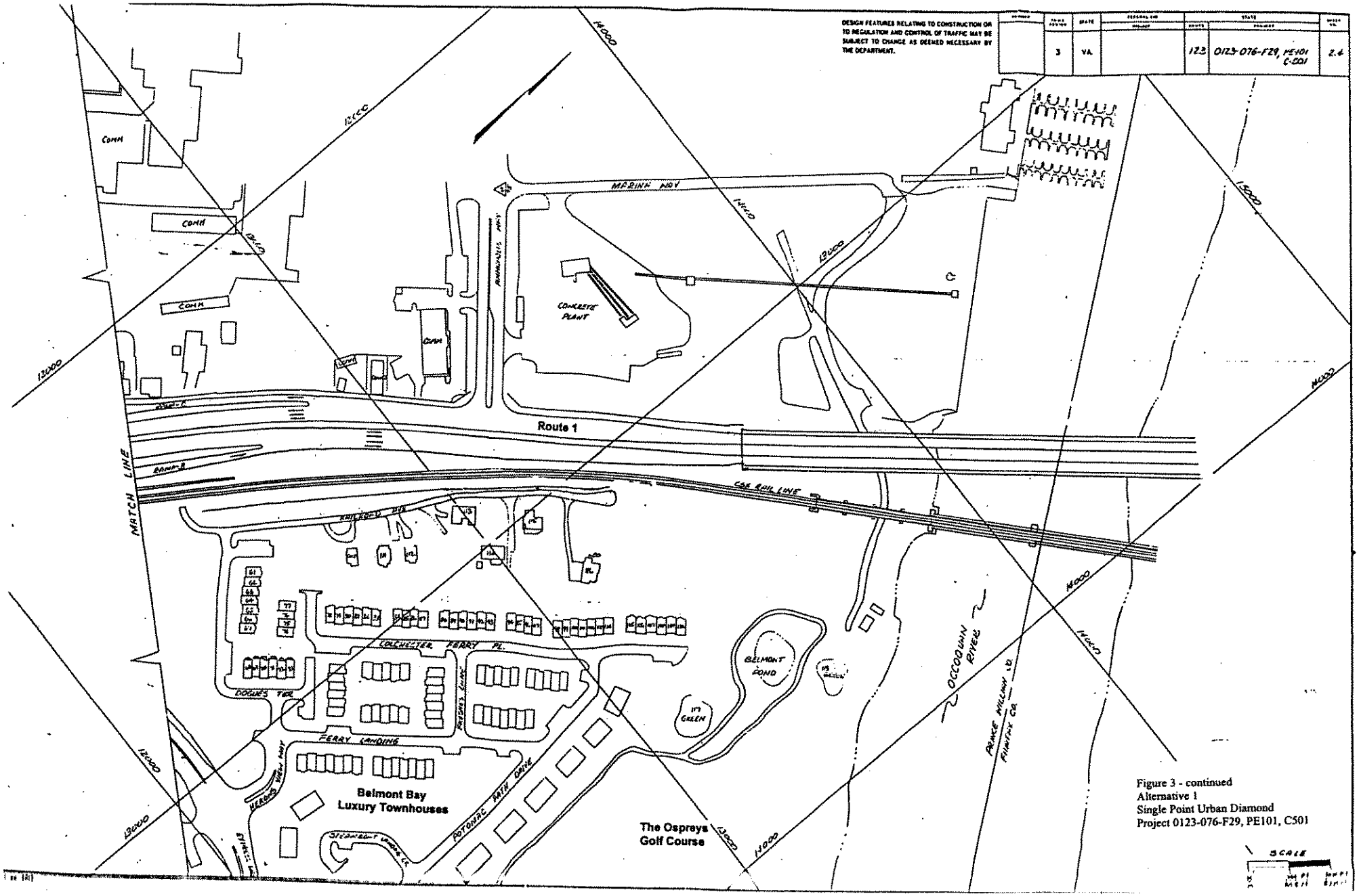


Figure 3 - continued
Alternative 1
Single Point Urban Diamond
Project 0123-076-F29, PE101, C501

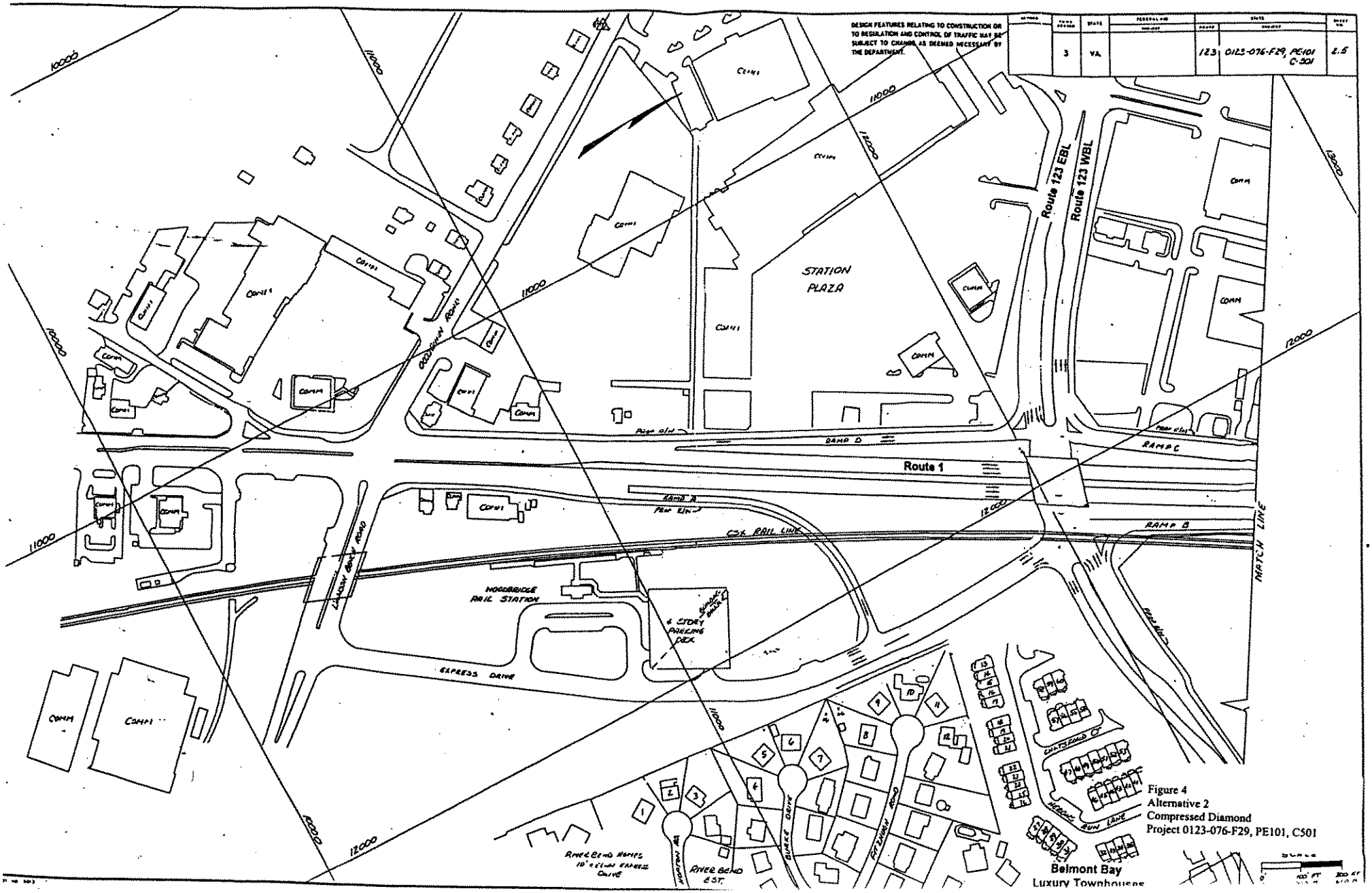


Figure 4
Alternative 2
Compressed Diamond
Project 0123-076-F29, PE101, C501

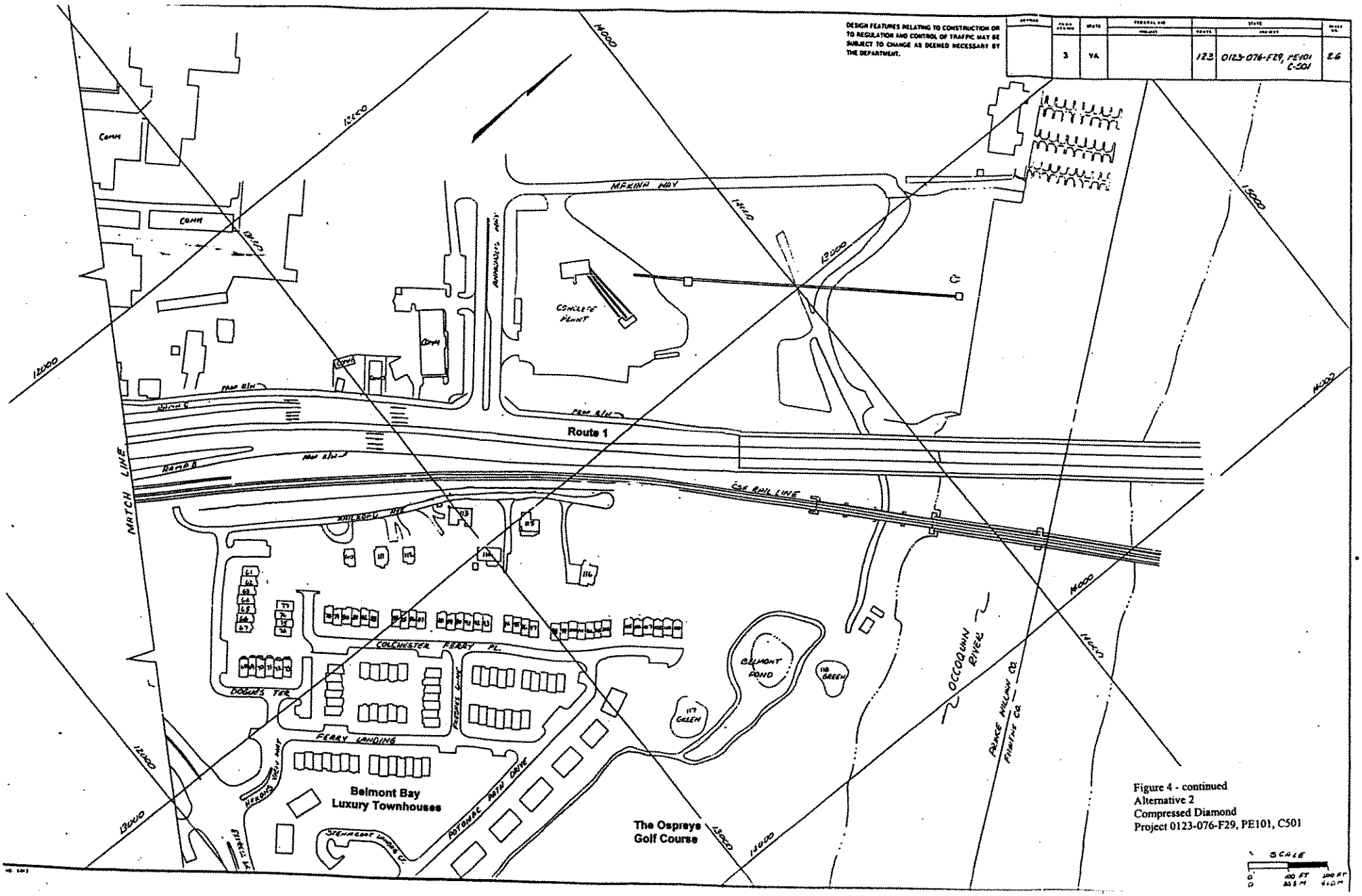


Figure 4 - continued
Alternative 2
Compressed Diamond
Project 0123-076-F29, PE101, C501

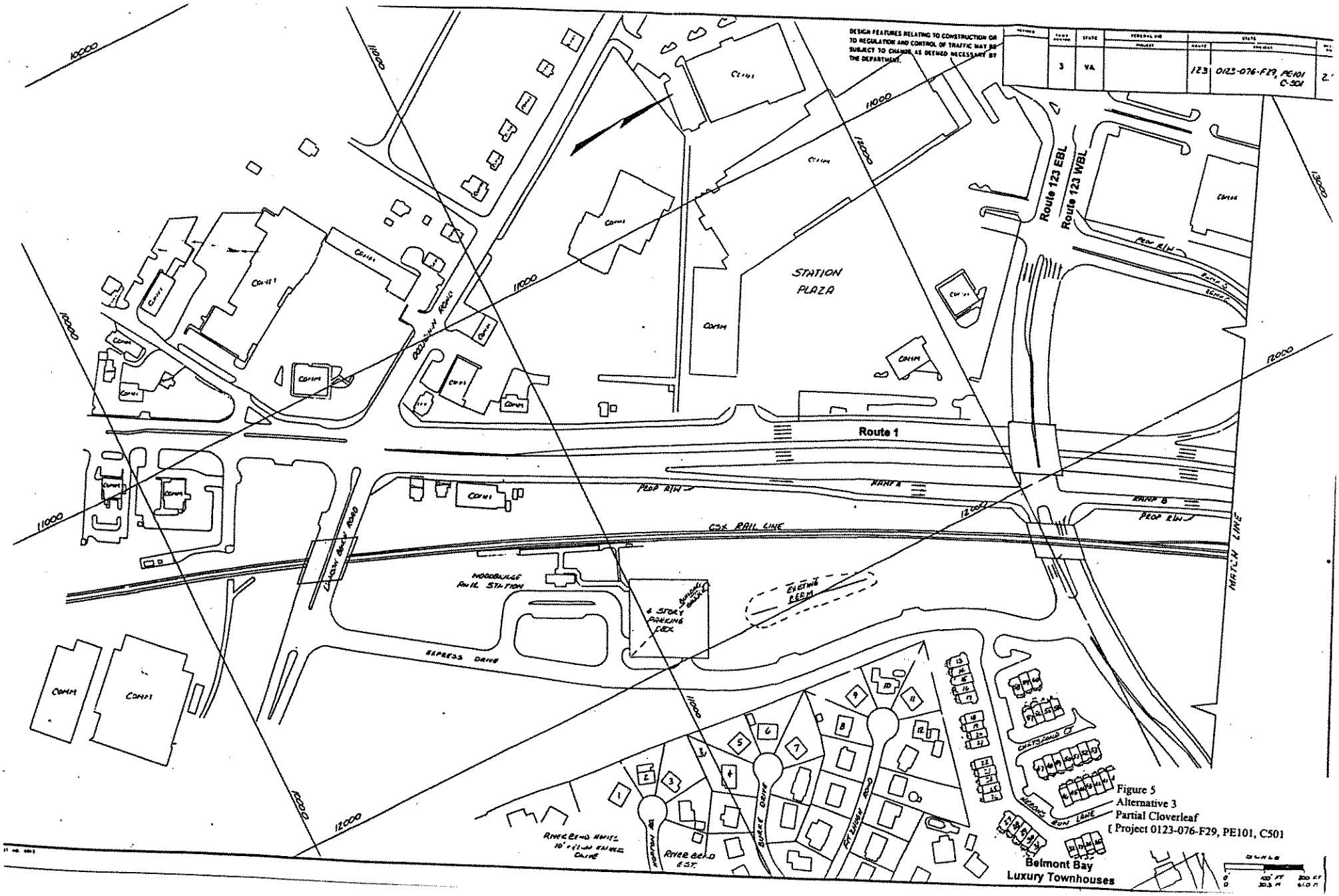


Figure 5
Alternative 3
Partial Cloverleaf
(Project 0123-076-F29, PE101, C501

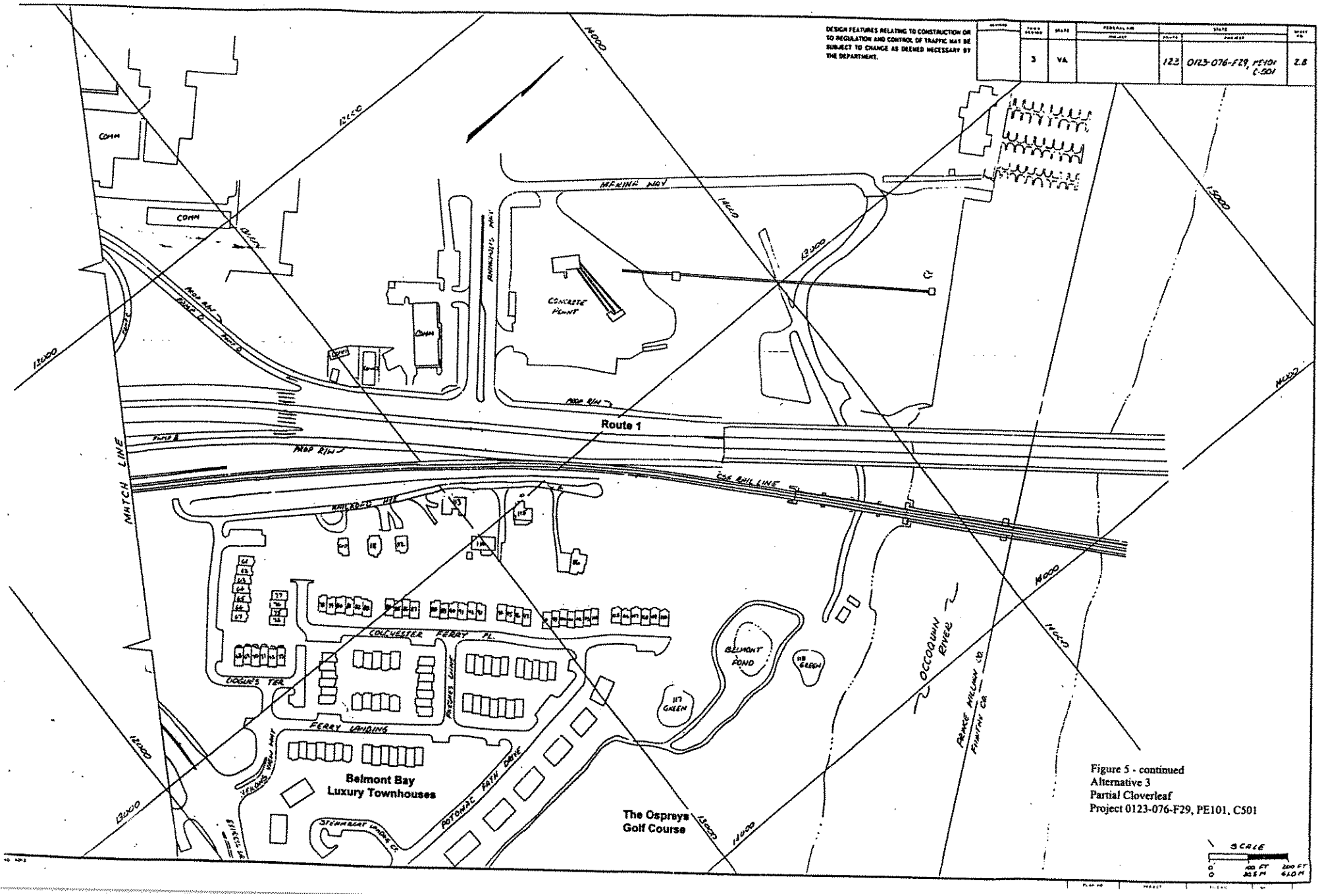


Figure 5 - continued
Alternative 3
Partial Cloverleaf
Project 0123-076-F29, PE101, C501

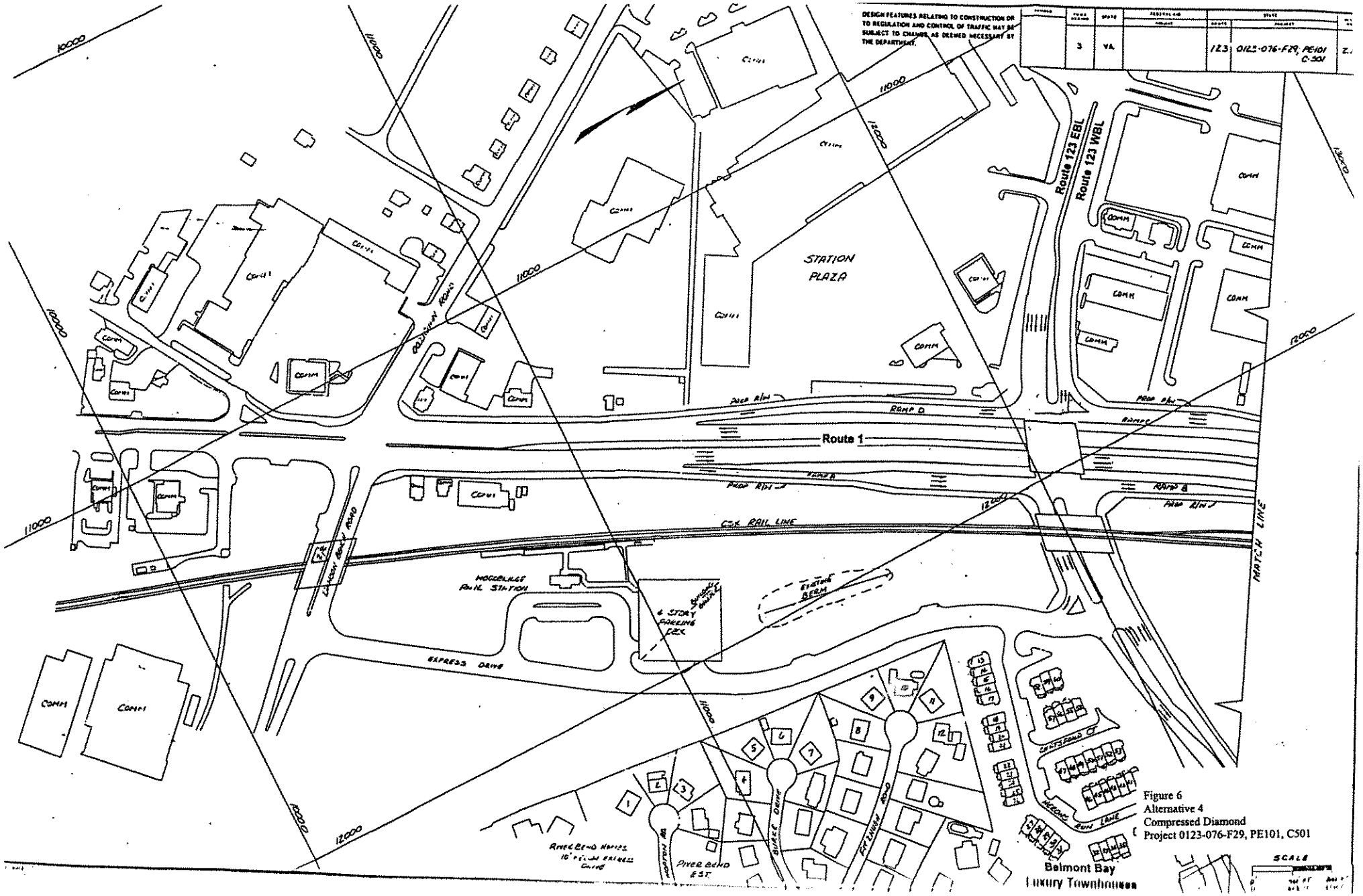


Figure 6
Alternative 4
Compressed Diamond
Project 0123-076-F29, PE101, C501

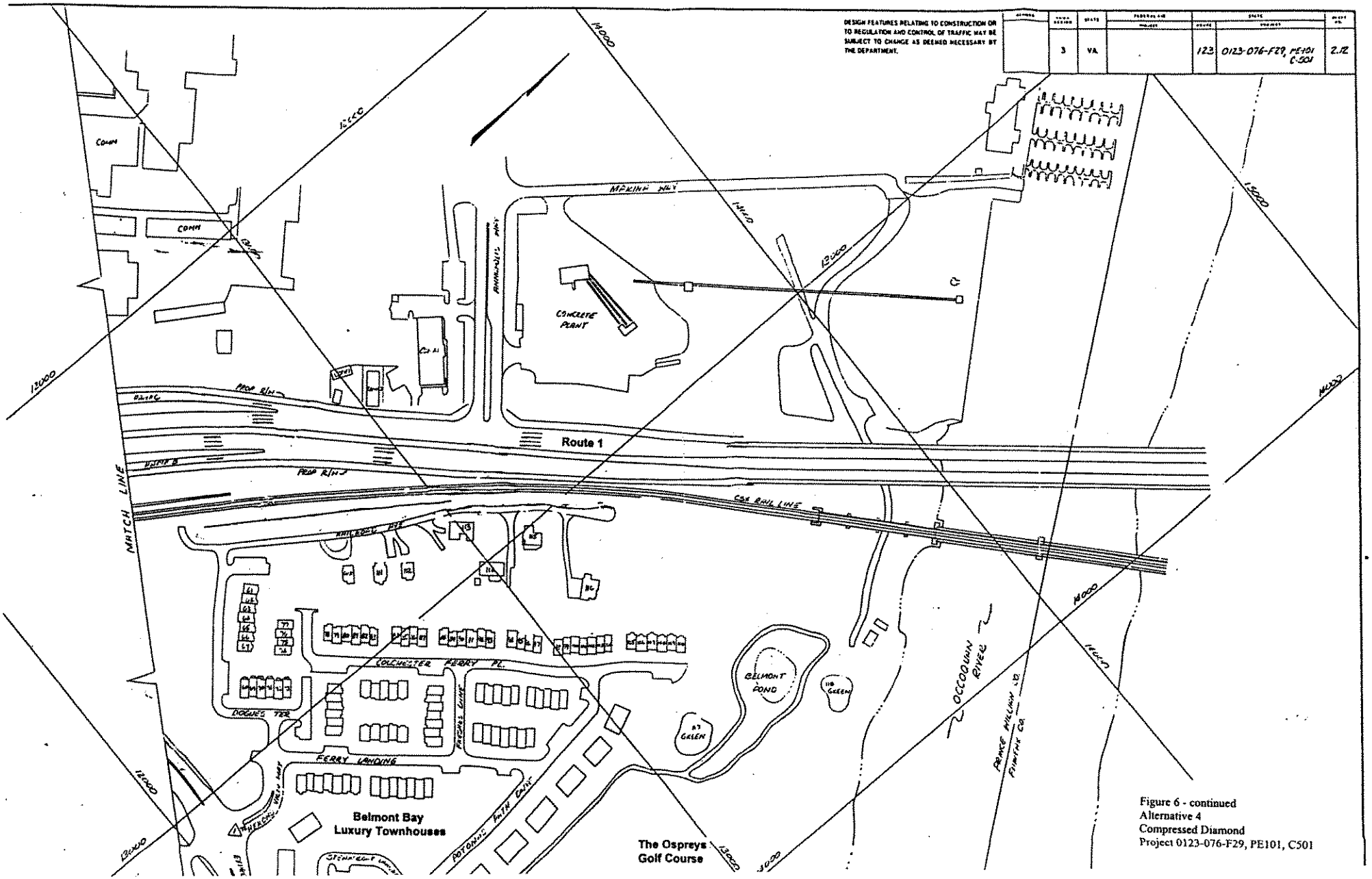


Figure 6 - continued
Alternative 4
Compressed Diamond
Project 0123-076-F29, PE101, C501

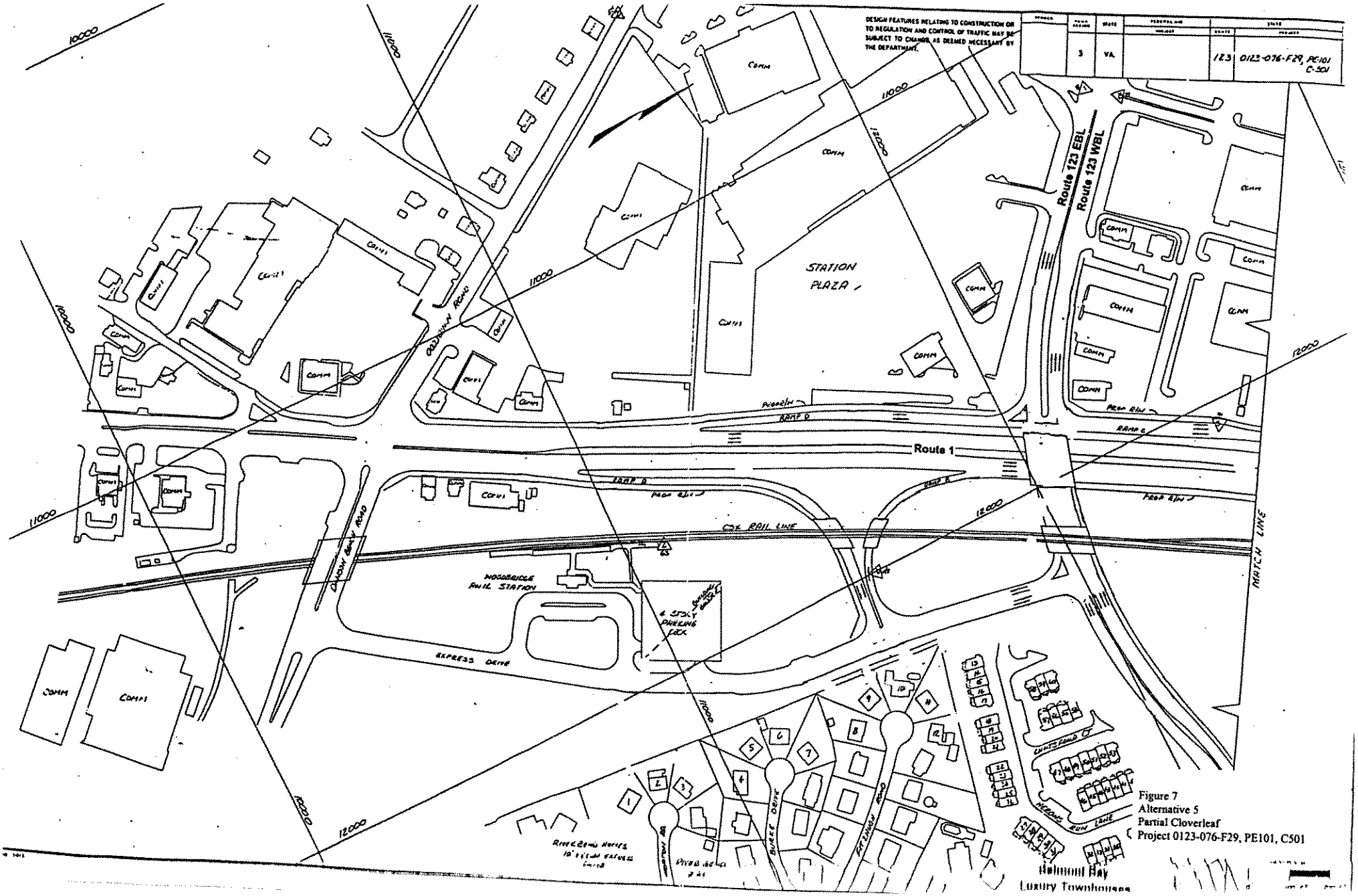


Figure 7
Alternative 5
Partial Cloverleaf
Project 0123-076-F29, PE101, C501

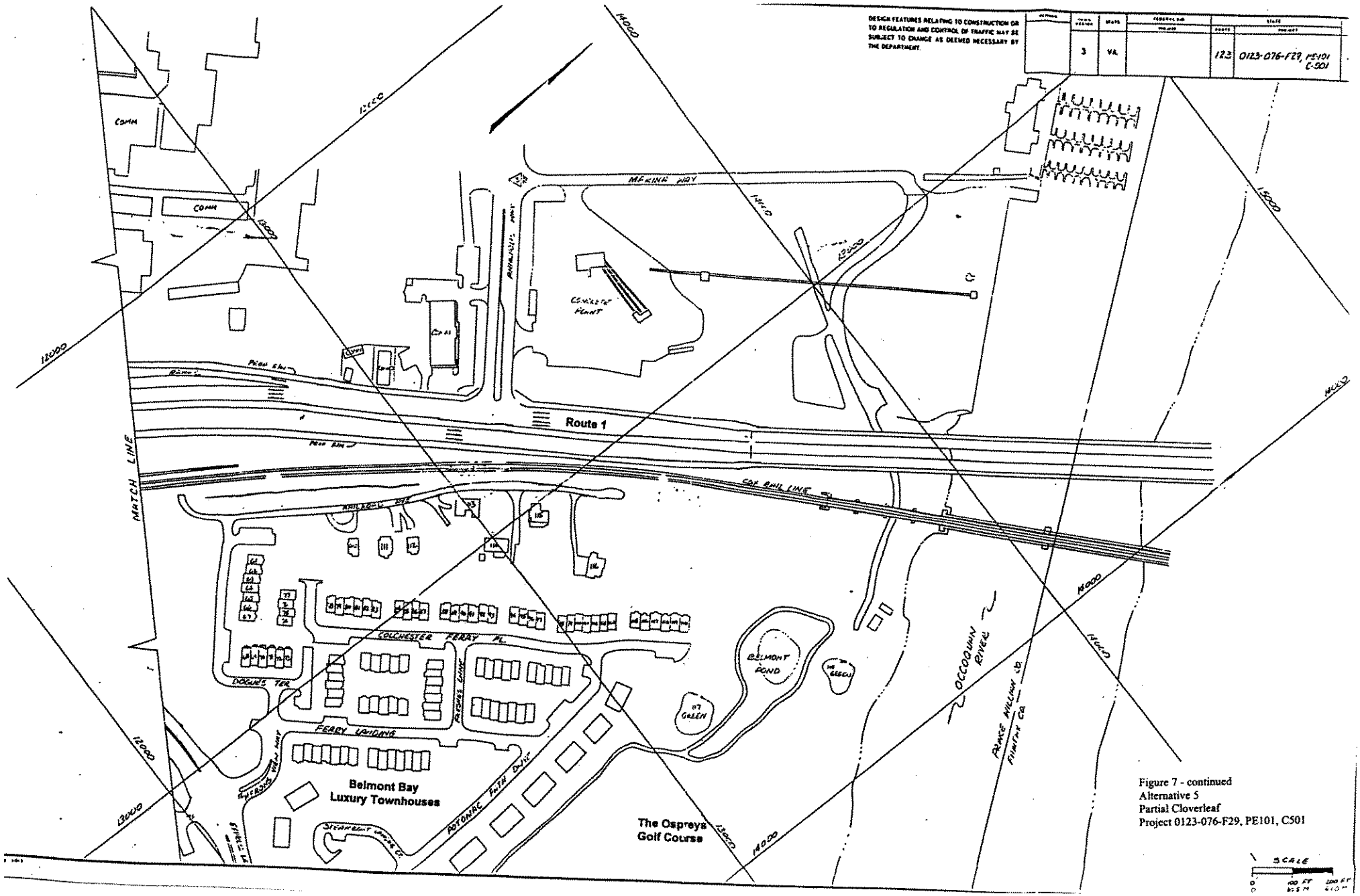


Figure 7 - continued
Alternative 5
Partial Cloverleaf
Project 0123-076-F29, PE101, C501

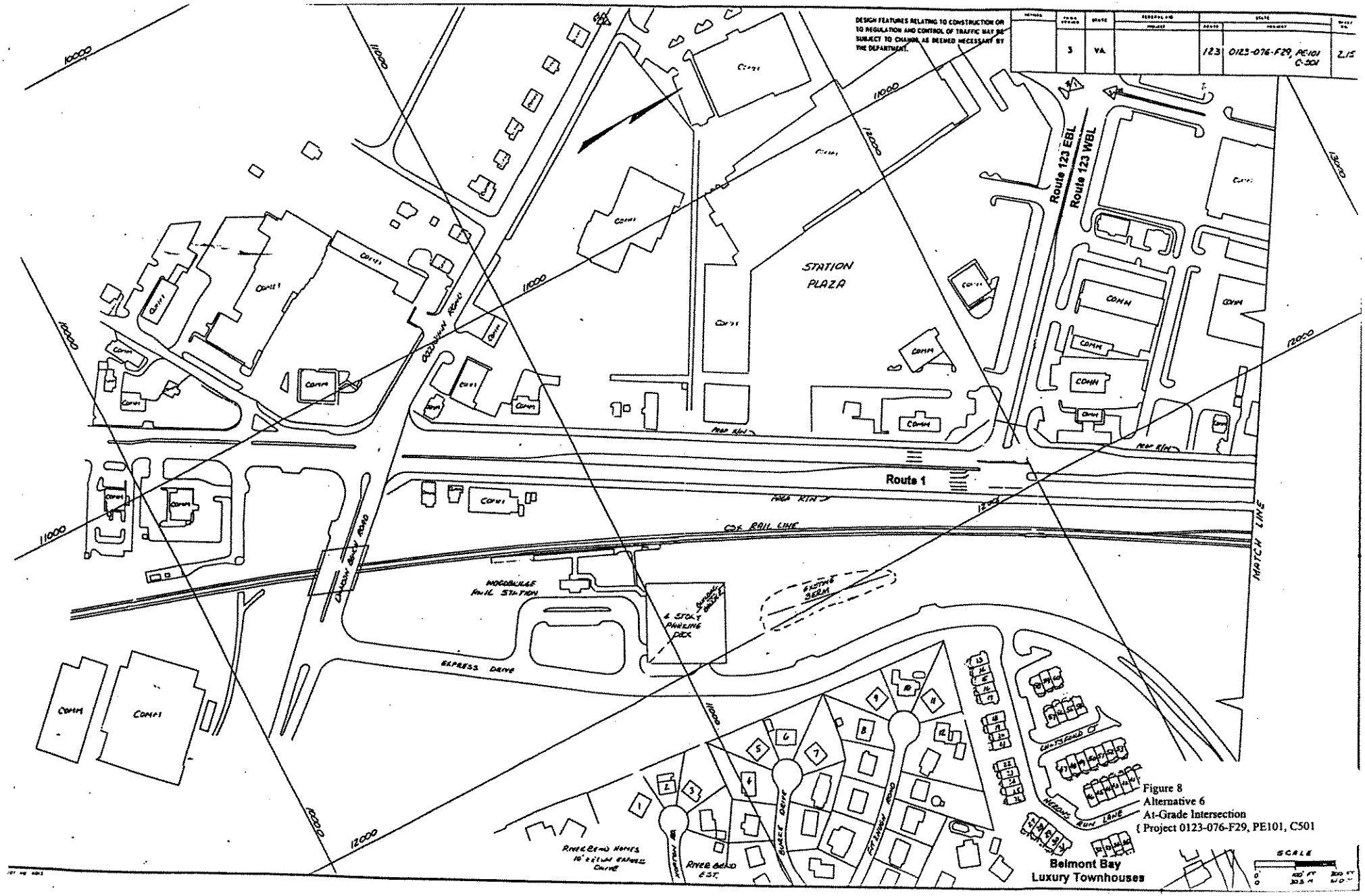


Figure 8
Alternative 6
At-Grade Intersection
(Project 0123-076-F29, PE101, C501

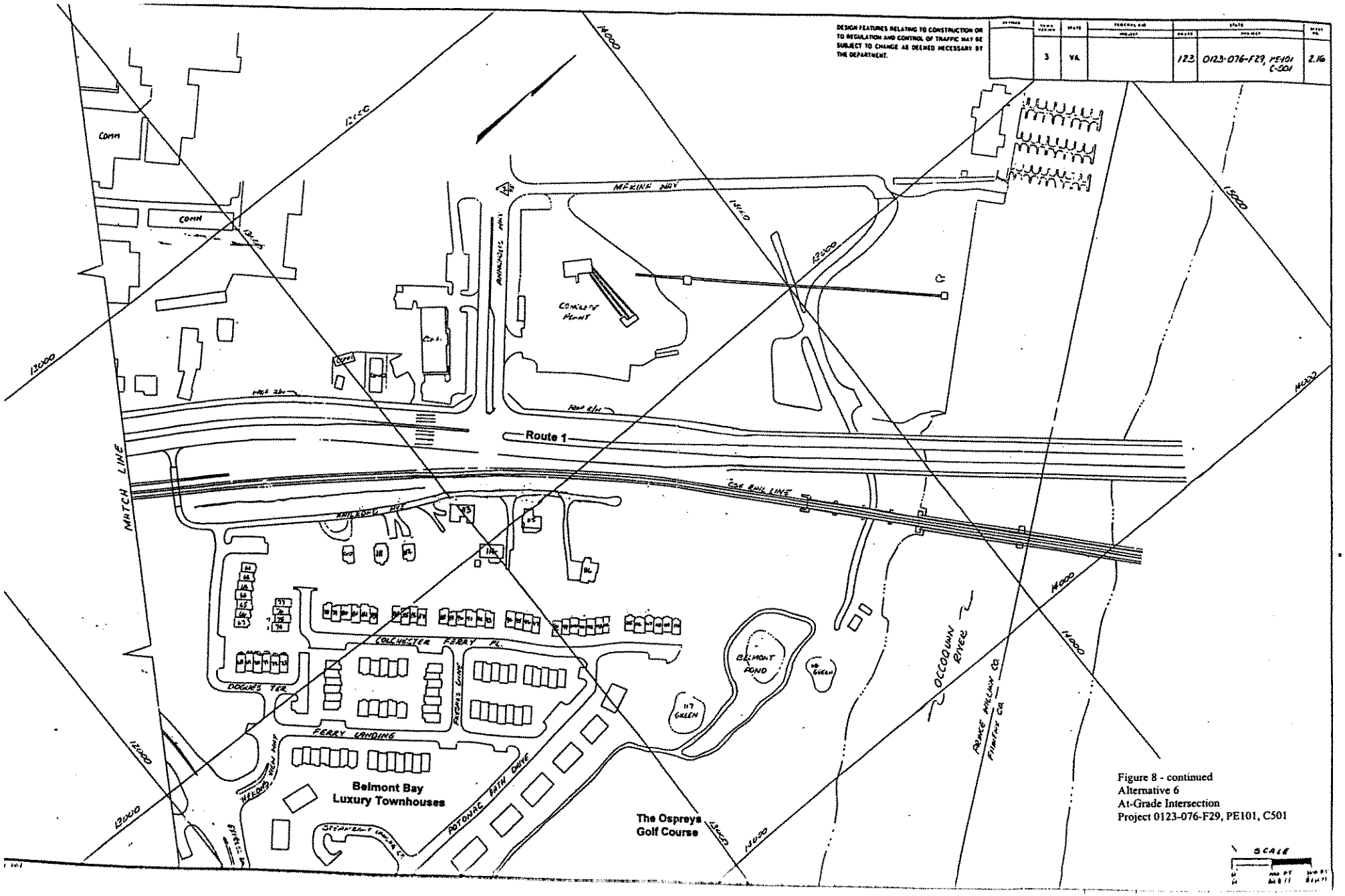


Figure 8 - continued
Alternative 6
At-Grade Intersection
Project 0123-076-F29, PE101, C501

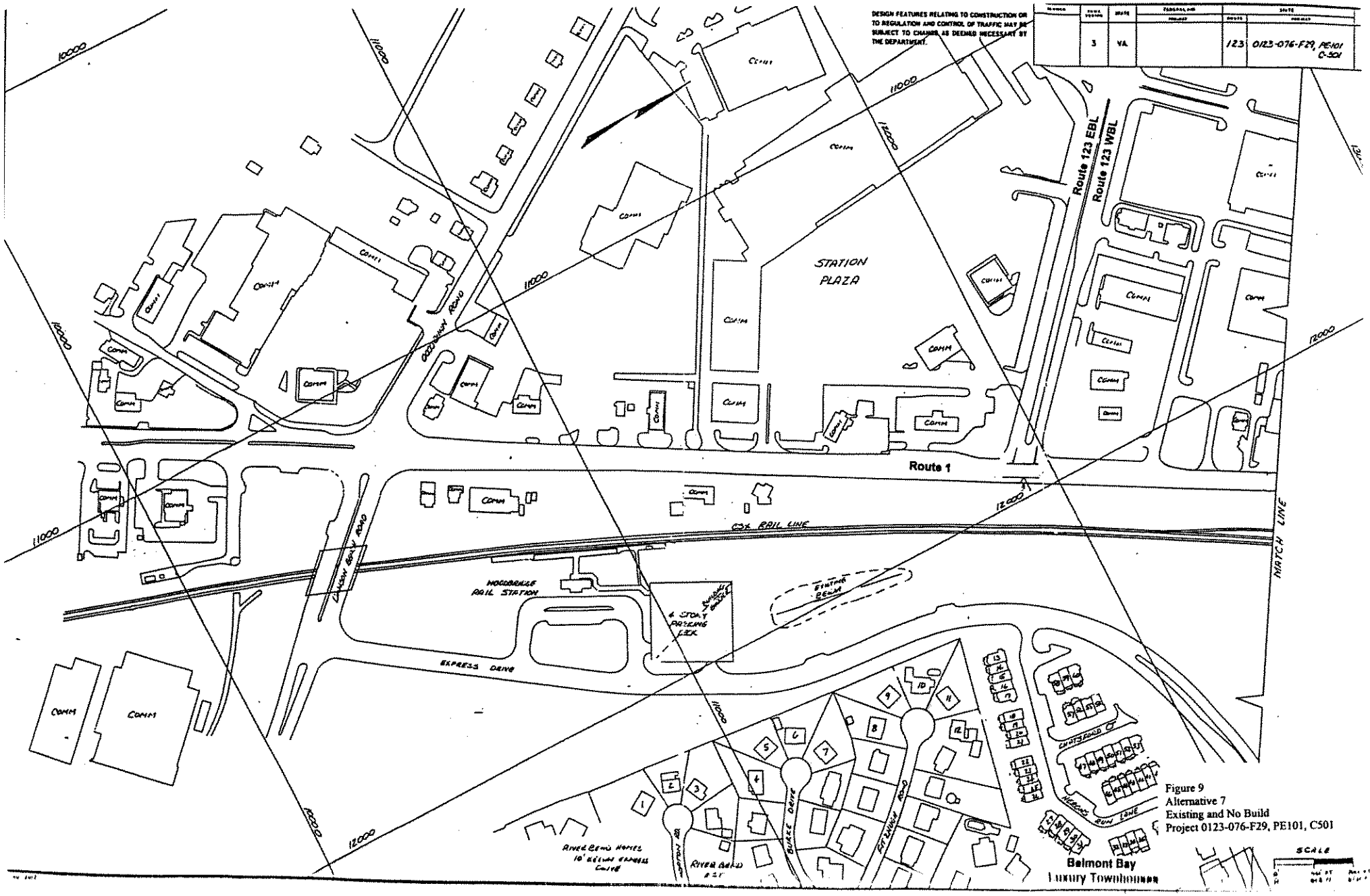


Figure 9
Alternative 7
Existing and No Build
Project 0123-076-F29, PE101, C501

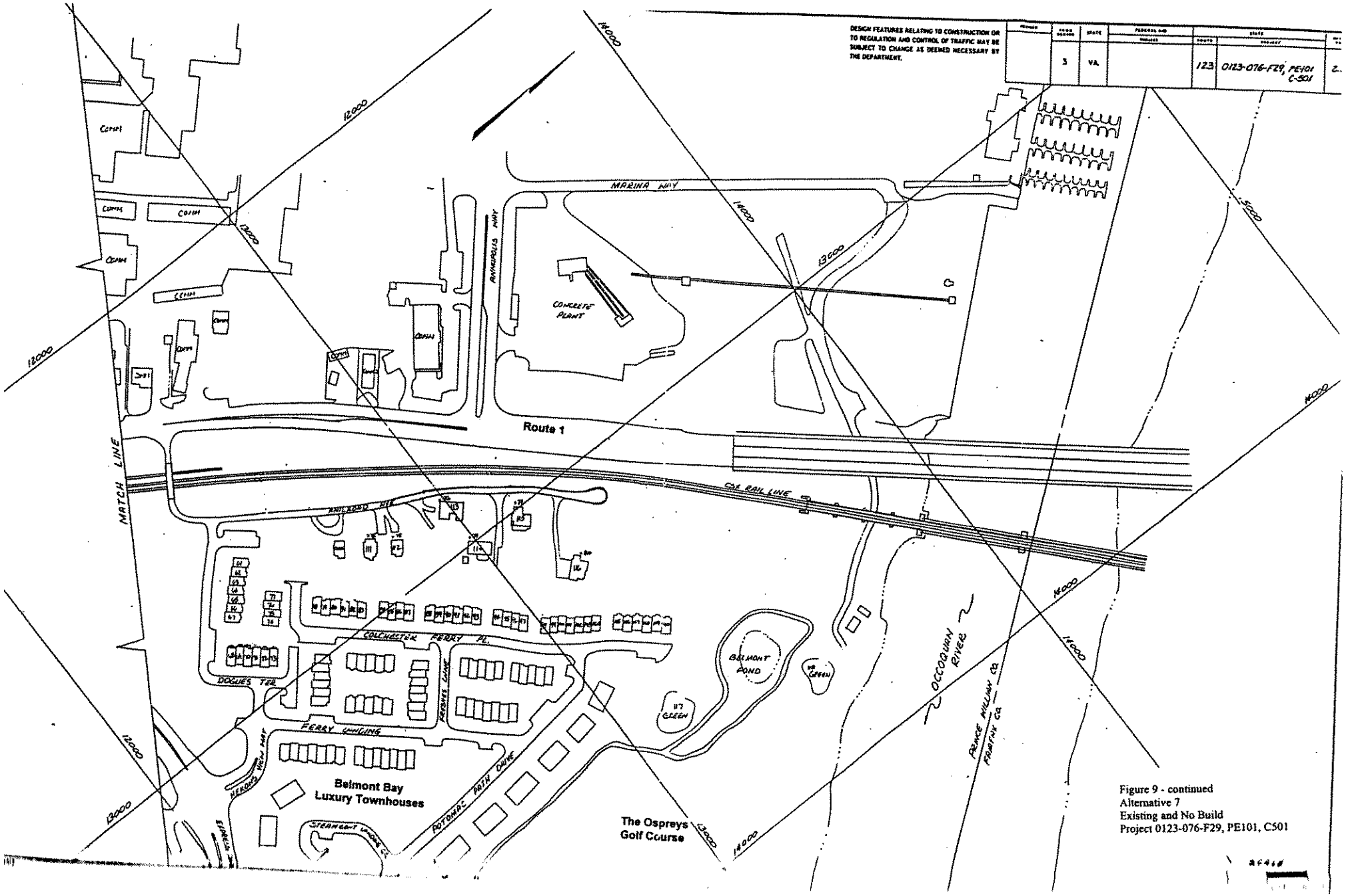


Figure 9 - continued
Alternative 7
Existing and No Build
Project 0123-076-F29, PE101, C501

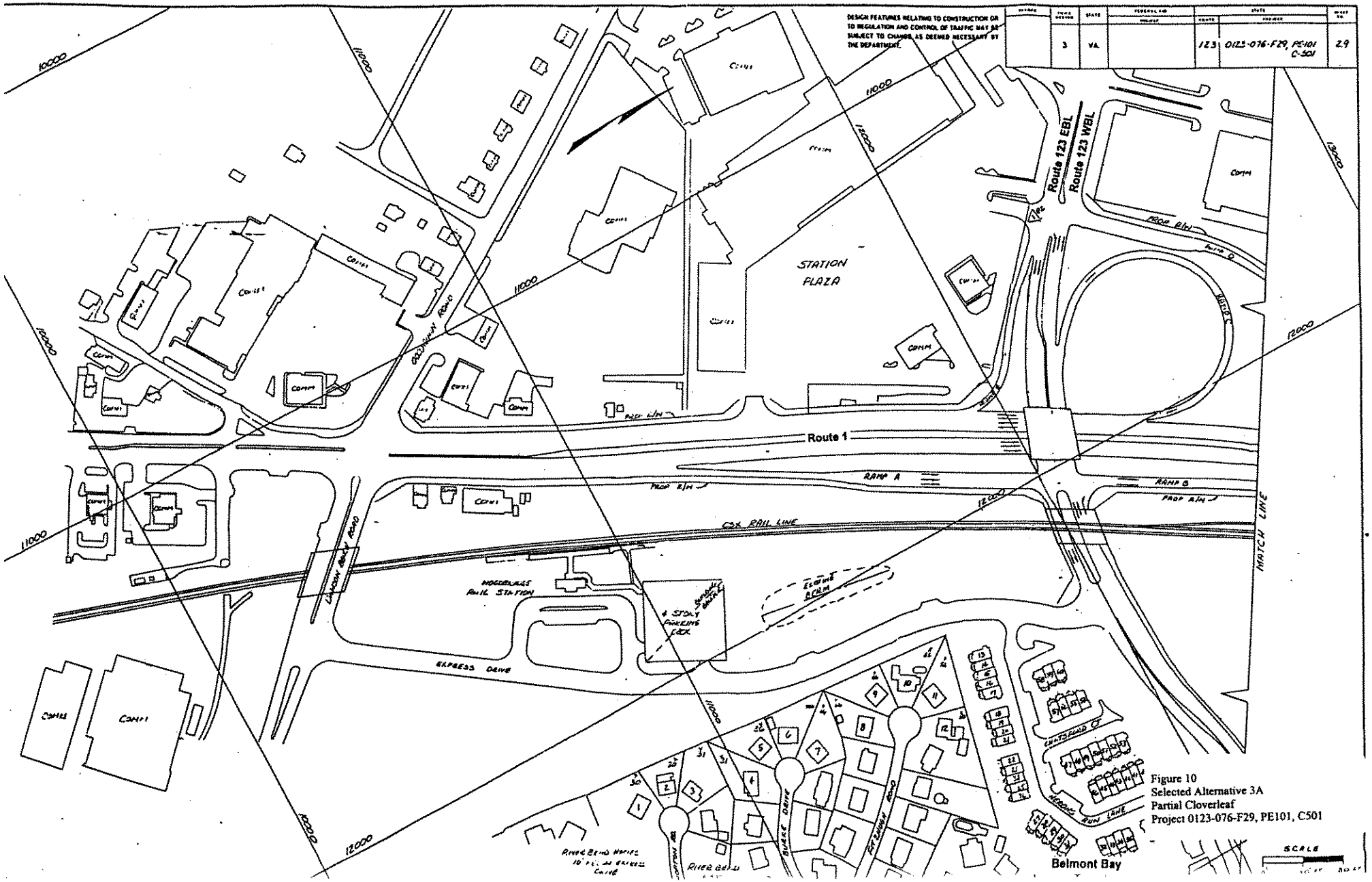


Figure 10
Selected Alternative 3A
Partial Cloverleaf
Project 0123-076-F29, PE101, C501

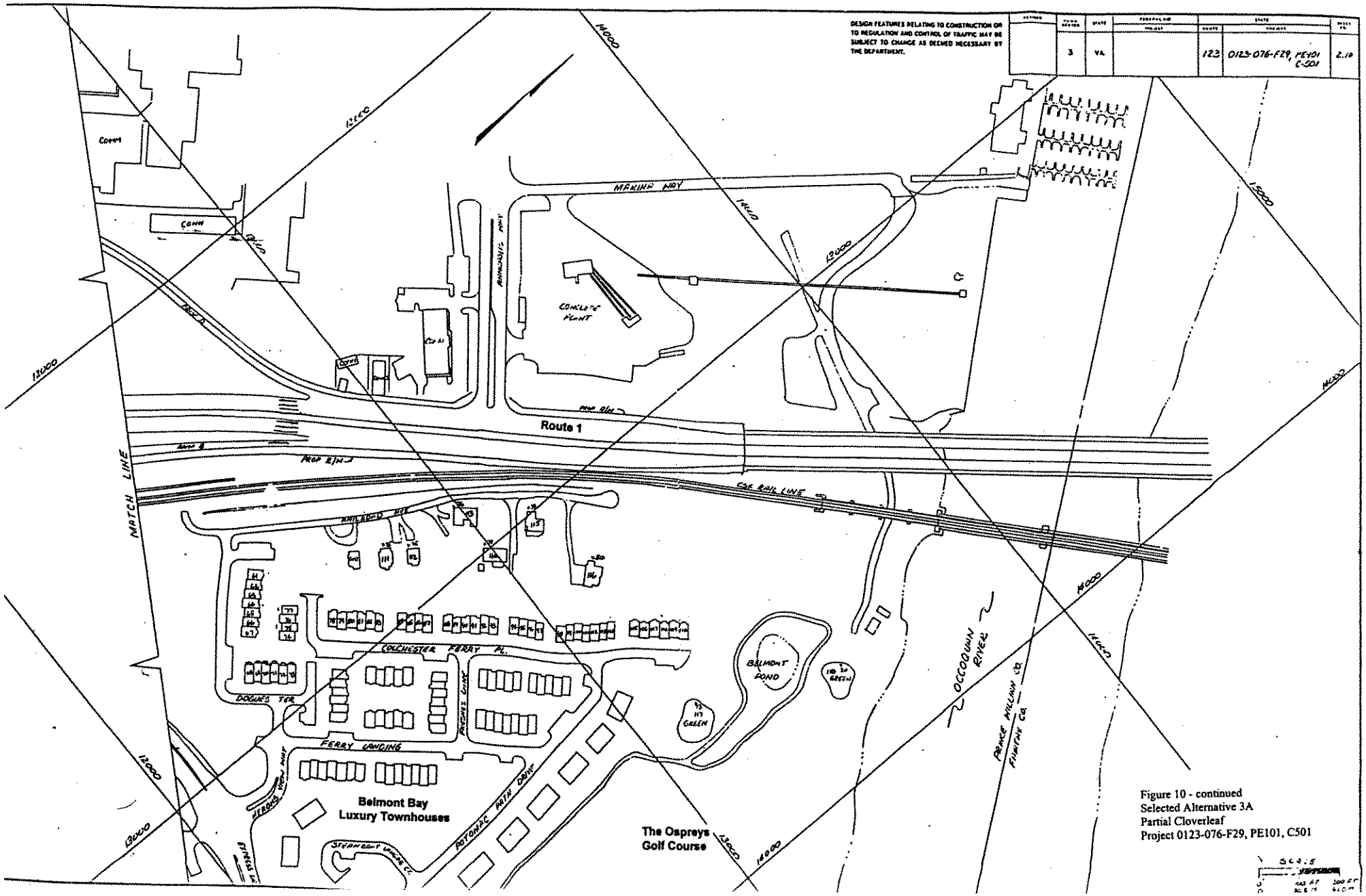


Figure 10 - continued
Selected Alternative 3A
Partial Cloverleaf
Project 0123-076-F29, PE101, C501

Appendix B

Air Quality Analysis

AIR QUALITY ANALYSIS

Prince William County

0123-076-F29, C-101
Alternative 3A
PPMS 14693

Prepared By:

Lee E. Remy
Environmental Engineer, Senior

Environmental Division
Virginia Department of Transportation

July 20, 1999

The proposed project is not expected to be a major source of air pollution. A detailed technical air analysis is not deemed necessary. VACALN5A, a simplified microcomputer procedure developed from the Federal Highway Administration's MOBILE3/CALINE3 Graphic Assessment Program (revised to include the 26 March 1993 Mobile 5.0A emission factors) was used to estimate carbon monoxide (CO) levels. The "worst case" assumptions were used for this analysis. These included peak hour traffic volumes, an ambient temperature of 30 degrees Fahrenheit, a windspeed of 1 m/s, an atmospheric stability rating of "D" and wind directions nearly parallel to the roadway.

Impacts of CO, the predominant pollutant emitted from gasoline powered motor vehicles, were determined for the closest worst case roadside sites, which are described below and shown on the site location map. All worst case commercial and residential CO results, along with their respective distances from the roadway center line (C/L) are listed.

SITE #	LOCATION	DISTANCE FROM C/L OF PAVEMENT (FEET)	DESCRIPTION
1	Rt.1, S.Occoquan Sta. 99+65	105.0' (Build) 98.4' (No-Build)	Commercial
2	Rt. 1, N.Occoquan Sta. 101+20	97.0' (Build) 105.0' (No-Build)	Commercial
3	S. of Rt. 123 Sta. 106+99	130.0' (Build) 114.8' (No-Build)	Commercial
4	Rt. 1, S.Annapolis Way Sta. 108+00	104.5' (Build) 113.5' (No-Build)	Commercial
5	Rt. 1, N.Annapolis Way Sta. 109+00	195.0' (Build) 187.0' (No-Build)	Residence

Peak one-hour and average eight-hour CO concentrations were determined. The resulting CO concentrations are shown in Table I in units of parts per million (ppm). Background

concentrations were assumed to be 6 and 3 ppm for the one- and eight-hour concentrations, respectively.

TABLE 1

Site No.	Year/Case	CO Concentrations, Including Background	
		One-Hour	Eight-Hour
1	1997/Base	6.6	3.4
	2003/No-Build	6.5	3.3
	2003/Build	6.6	3.4
	2020/No-Build	7.0	3.7
	2020/Build	6.8	3.6
2	1997/Base	6.5	3.3
	2003/No-Build	6.4	3.3
	2003/Build	6.8	3.5
	2020/No-Build	6.8	3.5
	2020/Build	7.0	3.7
3	1997/Base	6.3	3.2
	2003/No-Build	6.2	3.1
	2003/Build	6.2	3.1
	2020/No-Build	6.7	3.5
	2020/Build	6.2	3.2
4	1997/Base	6.7	3.5
	2003/No-Build	6.6	3.4
	2003/Build	6.6	3.4
	2020/No-Build	7.1	3.8
	2020/Build	6.5	3.4
5	1997/Base	6.3	3.2
	2003/No-Build	6.2	3.1
	2003/Build	6.3	3.2
	2020/No-Build	6.4	3.3
	2020/Build	6.2	3.2

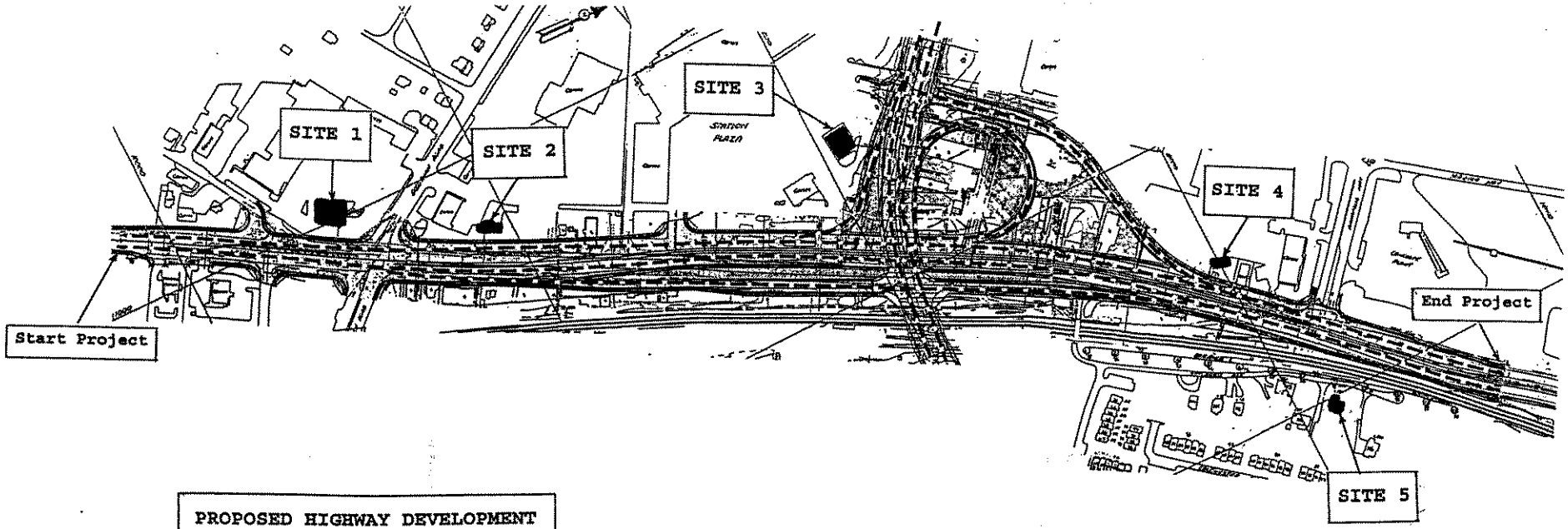
The estimated CO concentrations shown in Table I, including background, are well below the National Ambient Air Quality Standards (NAAQS) of 35 ppm and 9 ppm for the one- and eight-hour average concentrations, respectively.

The project is located in an area which is designated nonattainment for ozone. The project comes from both a Transportation Plan and a Transportation Improvement Program found to conform with the State Implementation Plan.

The temporary air quality impacts from construction are not expected to be significant. Construction activities are to be performed in accordance with the Department's "Road and Bridge Specifications". The Specifications are approved as conforming with the SIP and require compliance with all applicable local, state and federal regulations.

In conclusion, the project is in conformance with the current SIP and is not expected to interfere with the attainment or maintenance of the NAAQS.

AIR QUALITY SITE LOCATION MAP



PROPOSED HIGHWAY DEVELOPMENT
COUNTY OF PRINCE WILLIAM
PROJ. 0123-076-F29, PE101
From: SOUTH OF OCCOQUAN
To: NORTH OF ANNAPOLIS WAY

Appendix C

Noise Impact Analysis Technical Study

ROUTES 123/1 INTERSECTION PROJECT

PRINCE WILLIAM, VIRGINIA

NOISE IMPACT ANALYSIS

TECHNICAL REPORT

VIRGINIA DEPARTMENT OF TRANSPORTATION
ENVIRONMENTAL DIVISION
RICHMOND, VIRGINIA

STATE PROJECT:
0123-076-F29, PE-101, C-501
Intersection Route 1, Gordon Boulevard and Route 1, Jefferson Davis Highway

PPMS 14693

Robert E. Gibson
Environmental Engineer Senior

AUGUST, 1999

TABLE OF CONTENTS
NOISE IMPACT ANALYSIS

LIST OF TABLES

LIST OF FIGURES

I. Introduction

This study addresses the noise impacts for the selected build alternative, no-build and existing for the Routes 123/1 Interchange Project in Prince William County. The study corridor for Route 123 is from Horner Road to Express Drive and for Route 1 from Occoquan Road to the Bridge over Occoquan River. The project is approximately 1.128 kilometers (0.701 miles) in length along Route 1. A project location map is shown on Figure 1, Page 24. Detail project plans existing, no-build and build are shown on Figures 2.1-2.4, Pages 25-28.

Build Alternative will upgrade Route 1 from 4 to 6 lanes and extend Route 123 eastward across Route 1 with a grade separation and tie into Express Drive. Ramps will be provided to assist in turning movements. The Build Alternative will not require existing CSX train tracks to be relocated. However, CSX plans to add a third track through the area at some point in the future. Train noise was considered in this study but train noise associated with the future third track was not considered as train projections from CSX are not available. The study area contains a mixture of residential, commercial, and industrial land uses.

Federal guidelines has establish noise level criteria for different land-uses, and the noise study has determined whether these criteria have been approached or exceeded due to the proposed project.

II. Summary

The study reveals that for the design year 2020 traffic volume predictions will cause 6 residential properties, Sites 111-116 located on Railroad Ave. to be impacted by noise from the project. All impacted sites are the result of approaching or exceeding the

Noise Abatement Criteria of 67 dBA. There are no substantial noise increase impacts on this project. A substantial noise increase is when the design year build noise level equals or exceeds the existing noise level by 10 dBA. All impacts will occur at exterior (outside) areas of the properties. Train noise associated with the CSX tracks located parallel to Route 1 contributes to the noise at the six impacted properties.

Various noise abatement measures have been considered to reduce or eliminate the impacts at these properties, and only the construction of a sound barrier has been found to be feasible but not reasonable. Vertical or horizontal shifts in alignment would not be reasonable or feasible, and traffic control measures would not be feasible. Construction noise impacts must also be considered and are addressed in the last section of this study.

A sound barrier (Barrier 1) was considered on this project to protect noise-impacted homes (Sites 111-116) adjacent to Railroad Avenue. Train noise is substantial requiring the barrier to be located east of the CSX train tracks. Right of way will also be required and result in taking two of the six impacted properties as Railroad Avenue will require relocating. Barrier 1's total cost would be $339,500 for materials, installation, right of way and relocation of Railroad Avenue resulting in a cost per protected and benefited site of $84,900. The barrier is not cost effective as the cost per site exceeds $30,000. Barrier 1 would reduce the noise level by 5 to 6 dBAs at the 4 remaining impacted homes.

Barrier 1 will be given further consideration if third party funding becomes available. Third party funding can come from any source other then VDOT or FHWA. Should third party funding become available the Noise Abatement Committee will review Barrier 1 and make recommendations to the Chief Engineer. The Chief Engineer would then request FHWA's concurrence pending a survey of the impacted property owners. See Table 3 for a summary of Barrier 1.

III. Guidelines and Criteria

The noise impact of constructing the Routes 123/1 intersection improvement has been assessed in accordance with Federal Highway Administration (FHWA) guidelines published in Volume 7, Chapter 7, Section 2 of the Federal Aid Policy Guide (FAPG 7-7-2) and with the State Noise Abatement Policy. In order to determine the degree of impact of highway traffic noise on human activity, the Noise Abatement Criteria (NAC), Table 1, established by FAPG 7-7-2 is used. The NAC, listed in Table 1 for various activities, represent the upper limit of acceptable traffic noise conditions and also a balancing of that which may be desirable with that which may be achievable. The NAC applies to areas having regular human use and where lowered noise levels are desired. They do not apply to the entire tract of land on which the activity is based, but only to that portion where the activity takes place.

The NAC is given in terms of the hourly, A-weighted, equivalent sound level in decibels (dBA). The A-weighted sound level is a single number measure of sound intensity with weighted frequency characteristics that correspond to human subjective response to noise. However, since most environmental noise fluctuates from moment to moment, it is common practice to condense all of this information into a single number called the equivalent sound level (Leq). The Leq is the value of a steady sound level that would represent the same sound energy as the actual time-varying sound evaluated over the same time period. For highway traffic noise assessment, Leq is typically evaluated over a one-hour time period, and is denoted as Leq(h).

The noise impact assessment is made using the guidelines listed in Table 1. If, for a given activity, the design year noise levels "approach or exceed the NAC", then the activity is impacted and a series of abatement measures must be considered. Approach has been defined by VDOT as 1 dBA less than the NAC. There is another criterion for assessing impact provided in the Federal guidelines. A receptor can be noise impacted if the design year noise levels are substantially higher than existing levels. The State Noise Abatement Policy defines a substantial increase as 10 decibels or more, even though the levels may not reach the NAC. The final decision on whether or not to provide noise abatement along a project corridor will take into account the feasibility of the design and overall cost weighted against the environmental benefit.

TABLE 1
FHWA NOISE ABATEMENT CRITERIA

Activity Category	Leq(h)	Description Of Activity Category
A	57 **(Exterior)**	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 **(Exterior)**	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 **(Exterior)**	Developed land, properties or activities Not included in Categories A or B above.
D	---	Undeveloped lands.
E	52 **(Interior)**	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals and auditoriums.

IV. Methods

Impact assessment has been performed for all residential areas (neighborhoods/ communities/developments), and a recreational facility within the project corridor. These areas are listed in Table 2 and shown on Figures 2.1 through 2.4 (Pages 25-28).

Noise levels in these areas have been determined for the existing (1998) conditions, the design year (2020) no-build conditions, and the design year (2020) build conditions. Levels have been predicted for that hour of the day when the vehicle volume, operating speed, and number of heavy trucks (vehicles with 3 or more axles) combine to produce the worst noise conditions. Vehicle volumes and vehicle operating speeds combine to produce a worst case noise hour. Peak hour volumes and speeds were used in this study.

A review of the project corridor has established highway traffic as the dominant source of noise for the build alternatives. Train noise also contributes noise to the project study area. Since highway and train noise can be determined accurately through computer modeling techniques, monitoring of existing noise levels has been considered unnecessary. In areas that are dominated by traffic noise both existing and design year traffic noise calculations have been performed using the Federal Highway Administration's Traffic Noise Model (FHWA TNM®) Version 1.0a, March 1999. FHWA TNM® was developed and sponsored by the U. S. Department of Transportation and John A. Volpe National Transportation Systems Center, Acoustics facility. TNM computer model accounts for such factors as ground absorption, roadway geometry, receptor distance, shielding from local terrain and structures, vehicle volume, operating speed, and volumes of medium trucks (vehicles with 2 axles and 6 tires) and heavy trucks.

Assessment of traffic noise impact requires three comparisons:

(1) The noise levels under existing conditions must be compared to those under build conditions. This comparison shows the change in noise level that will occur between the present time and the design year if the project is constructed.

(2) The noise levels under design year no-build conditions must be compared to those under build conditions. This comparison shows how much of the change in levels can actually be attributed to the proposed project.

(3) The noise levels under build conditions must be compared to the applicable NAC. This comparison determines the compatibility of noise levels under build conditions and present land use.

The noise prediction results are summarized in Table 2. Included for each study area are the applicable NAC and the highest hourly equivalent sound level for the existing, no-build, and build conditions.

TABLE 2
STUDY AREA LOCATIONS AND RESULTS

COMMUNITY/LOCATION DESCRIPTION	HIGHEST HOURLY EQUIVALENT SOUND LEVEL $L_{eq}(h)$			
	FHWA NAC	1998 EXISTING	2020 NO-BUILD	2020 BUILD
Residence east side of Express Drive across from Woodbridge Train Station, Site 10 Represents areas in River Bend Estates Figure 2.1 Existing and No-Build Figure 2.3 Build Alt.	67	60	59	59
Townhouse on Herons Run Lane, Site 13 Represents Belmont Bay Townhouses east and south of Express Drive Figure 2.1 Existing and No-Build Figure 2.3 Build Alt.	67	61	60	63
Townhouse on Dogues Terrace, Site 61 Represents Belmont Bay Townhouses on Dogues Terrace Figure 2.2 Existing and No-Build Figure 2.4 Build Alt.	67	63	63	64
Townhouse on Colchester Ferry Place, Site 78, Represents Belmont Bay Townhouses on the west side of Colchester Ferry Place Figure 2.2 Existing and No-Build Figure 2.4 Build Alt.	67	61	61	62
Residential dwelling located on Railroad Ave. Site 113, Represents dwelling located on Railroad Ave. Figure 2.2 Existing and No-Build Figure 2.4 Build Alt.	67	69	70	71
The Ospreys Golf Course, putting green Site 118 Figure 2.2 Existing and No-Build Figure 2.4 Build Alt.	67	58	58	58

V. Impact Assessment

The results of the impact assessment indicate that the Routes 123/1 Intersection Project will have minimal affect on noise levels in the project corridor. There will be 6 residential properties impacted by noise. The six impacted properties, Sites 111-116 are located on Railroad Avenue and will receive noie levels which equal or exceed the 66 dBA noise approach criteria. The 2020 Build noise levels at the impacted sites ranges from 66 to 71 dBA. There are no substantial noise increase impacts on this project. The project's design year 2020 build noise levels will range from 56 to 71 dBA, 2020 no-build from 54 to 70 dBA and the 1998 existing ranges from 54 to 69 dBA. See the Appendix for a complete listing of existing, no-build and build noise levels for all study sites.

Existing train noise was included in the resulting noise levels. This study assumes that the train tracks will not be relocated. CSX plans to add a third rail closer to the impacted sites. The closer third rail will result in increased train noise at sites along Railroad Avenue.

A. Residential Impacts

The list shown below indicated the total residential impacts that will be expected in the design year build from the Routes 123/1intersection project.

- **River Bend Estates (Figures 2.1, 2.3)**

  Sites 1-12

  This area includes single-family dwellings located on Hopton Road, Burke Drive and Fitzhugh Road. No homes in this area will experience design year build noise levels equaling or exceeding 66 dBA. Site 10 will receive the highest noise level. Site 10 will experience a design year 2020 build noise level of 59 dBA. The design year 2020 no-build noise level will be 59 dBA and the 1998 existing year is 60 dBA. No sites within this area will experience substantial noise increase impacts.

- **Belmont Bay Townhouses (Figures 2.1, 2.3)**
  Sites 13-60

This area includes single-family residential townhouses located on Herons Run Lane and Chatsford Court east of Express Drive. No homes in this area will experience design year build noise levels equaling or exceeding 66 dBA. Site 13 will receive the highest noise level. Site 13 will experience a design year 2020 build noise level of 63 dBA. The design year 2020 no-build noise level will be 60 dBA and the 1998 existing year is 61 dBA. No sites within in this area will experience substantial noise increase impacts.

- **Belmont Bay Townhouses (Figures 2.2, 2.4)**
  Sites 61-110

This area includes single-family residential townhouses located on Dogues Terrace and Colchester Ferry Place. No homes in this area will experience design year build noise levels equaling or exceeding 66 dBA. Site 61 will receive the highest noise level. Site 61 will experience a design year 2020 build noise level of 64 dBA. The design year 2020 no-build noise level will be 63 dBA and the 1998 existing year is 63 dBA. No sites within in this area will experience substantial noise increase impacts.

- **Homes on Railroad Ave. (Figures 2.2, 2.4)**
  Sites 111-116

This area included single-family residential dwellings located on Railroad Ave. Six residential homes will be impacted in the design year 2020. Site 113 will receive the highest noise level. Site 113 will experience a design year 2020 build noise level of 71 dBA. The design year 2020 no-build noise level will be 70 dBA and the 1998 existing year is 69 dBA. No sites in this area will experience substantial noise increase impacts.

B. Churches, Schools, Community Recreational Facility

There are no schools or churches within the project corridor. One recreational facility, the Ospreys Golf Course is within the project corridor. The Golf Course will not be impacted by noise from the project. Site 118, a golf course green will receive the highest noise level. Site 118 will experience a design year 2020 build noise level of 58 dBA. The design year 2020 no-build noise level will be 58 dBA and the 1998 existing year is 58 dBA. The golf course will not experience substantial noise increase impacts.

VI. Noise Abatement

Noise abatement measures typically considered when noise impact is predicted to occur include: alteration of vertical or horizontal alignments, management of traffic, construction of sound barriers, and acoustical insulation of public use and non-profit facilities.

The alteration of vertical alignment has been considered to reduce or eliminate the impacts created by the Routes 123/1 intersection project; however, this is not practical, as deep cuts will be necessary to eliminate the impacts. Deep cuts will require additional right of way. Shifting the horizontal alignment westward away from the impacted homes will require relocating Route 1. This relocation would result in a new bridge over the Occoquan River. This is not a cost effective option to eliminate noise impacts.

Traffic management measures that have been considered in conjunction with this project include reduced speeds and truck restrictions on Route 1. Truck restrictions are not practical since this facility is a major north-south primary route used by local traffic. Reducing speeds will not be an effective noise mitigation measure since a substantial decrease in speed is necessary to provide adequate noise reduction. Typically, a 10-mph reduction in speed will result in only a 2-dBA decrease in noise level.

The construction of sound barriers has been considered at all impacted locations within the project corridor. The locations of the barriers considered are shown on Figure 2.4. Table 3 is a summary of Barrier 1. Barrier 1 was designed using the Federal Highway Administration's Traffic Noise Model (FHWA TNM®) Version 1.0a, March 1999. Barrier costs have been estimated using a unit cost for materials and installation of $172 per square meter ($16 per square foot). The determination of a barrier's cost effectiveness has been based on the following:

For residential properties, a barrier is cost effective when the cost does not exceed $30,000 per protected or benefited residential unit.

A property is considered protected when it receives a noise reduction of at least 5 decibels.

Should a non-impacted property receive 5 dBA or more noise reduction then the property will be considered benefited and included in the cost per protected site equation.

For non-residential properties such as parks and churches, the determinations is based on cost, severity of impact (both in terms of noise levels and the size of the impacted area and the activity it contains), and amount of noise reduction.

While impacts have been assessed and sound barriers evaluated for proposed developments in the Routes 123/1 project corridor, such developments do not qualify for sound barrier construction unless a development plan and schedule of development have been approved by the County of Prince William prior to the date the Commonwealth Transportation Board adopts the location and design of this project. Further, in accordance with the State Noise Abatement Policy, a sound barrier for a proposed development will not be constructed until the portion of the development to be protected by the barrier has been completed to the satisfaction of the Virginia Department of Transportation (VDOT).

A sound barrier (Barrier 1) was considered on this project to protect noise-impacted homes (Sites 111-116) adjacent to Railroad Avenue. Train noise is substantial requiring the barrier be located east of the CSX train tracks. Right of way will also be required and result in taking two of the six impacted properties as Railroad Avenue will require relocating. Barrier 1's total cost would be $339,500 for materials, installation, right of way and relocation of Railroad Avenue resulting in a cost per protected and benefited site of $84,900. The barrier's design will be 274 meters (900 feet) in length and range in height of 3.0-3.4 meters (10-11 feet). The barrier is not cost effective as the cost per site exceeds $30,000. Barrier 1 would reduce the noise level by 5 to 6 dBAs at the 4 remaining impacted homes.

Barrier 1 will be given further consideration if third party funding becomes available. Third party funding can come from any source other then VDOT or FHWA. See Table 3 for a summary of Barrier 1.

TABLE 3
BARRIER 1 - SUMMARY

Number Homes/Apt Impacted	Number Rec. Facility	Number Church Impacted	Number of Impacts	Protected and Benefited	Barrier Length Meters (Ft)	Barrier Ht Range Meters (Ft)		Barrier Cost	Cost/ Protected Site
6	0	0	6	4	274 (900)	3.0-3.4 (10-11)		* $149,000 ** $190,500	
							Total	**$339,500**	**$84,900**

*** Material and Installation**
**** Right of Way and Relocation of Railroad Avenue**

Note: The relocation of Railroad Avenue will require the taking of 2 of the 6 impacted properties. The cost per protected site was computed using 4 protected properties.

VII. Sound Barrier Approval Process

Barrier 1 is not cost effective and will require third party funding to be constructed. Third party funding commitments must be to VDOT in writing within 45 days after the Design Public Hearing. Should third party funding become available the barrier would be brought before the Sound Barrier Abatement Committee, which will make a recommendation to the Chief Engineer. The Chief Engineer would then approve the barrier for construction and seek FHWA's concurrence for funding pending a survey of the impacted property owners.

VIII. Construction Noise

Land uses that will be sensitive to traffic noise will also be sensitive to construction noise. A method of controlling construction noise is to establish the maximum level of noise that construction operations can generate. In view of this, VDOT has developed and FHWA has approved a specification that establishes construction noise limits. This specification can be found in VDOT's *January 1997 Metric Road and Bridge Specifications, Section 107.14(b.3), "Noise Pollution"*. The contractor will be required to conform to this specification to reduce the impact of construction noise on the surrounding community.

APPENDIX

SITE NO.	LOCATION AND DESCRIPTION	1998 EXIST Leq	2020 NO-BUILD Leq	BUILD: 2020 No Barrier Leq	BUILD: 2020 With Barrier Leq	INSERTION LOSS dB(A)	IMPACT Y/N
1	Hopton Rd, River Bend Estates	55	55	57	57	0	N
2	Hopton Rd, River Bend Estates	55	56	57	57	0	N
3	Hopton Rd, River Bend Estates	55	55	58	58	0	N
4	Burke Dr., River Bend Estates	55	55	57	57	0	N
5	Burke Dr., River Bend Estates	56	56	59	59	0	N
6	Burke Dr., River Bend Estates	55	56	60	60	0	N
7	Burke Dr., River Bend Estates	55	56	59	59	0	N
8	Fitzhugh Rd, River Bend Estates	55	55	59	59	0	N
9	Fitzhugh Rd, River Bend Estates	59	60	59	59	0	N
10	Fitzhugh Rd, River Bend Estates	59	60	59	59	0	N
11	Fitzhugh Rd, River Bend Estates	60	60	58	58	0	N
12	Fitzhugh Rd, River Bend Estates	57	58	56	56	0	N
13	Herons Run Ln., Belmont Bay	61	60	63	63	0	N
14	Herons Run Ln., Belmont Bay	60	60	62	62	0	N
15	Herons Run Ln., Belmont Bay	60	59	61	61	0	N
16	Herons Run Ln., Belmont Bay	59	59	60	60	0	N
17	Herons Run Ln., Belmont Bay	58	59	59	59	0	N
18	Herons Run Ln., Belmont Bay	57	58	58	58	0	N
19	Herons Run Ln., Belmont Bay	57	58	58	58	0	N
20	Herons Run Ln., Belmont Bay	57	57	58	58	0	N
21	Herons Run Ln., Belmont Bay	57	57	57	57	0	N
22	Herons Run Ln., Belmont Bay	56	56	57	57	0	N
23	Herons Run Ln., Belmont Bay	56	56	57	57	0	N
24	Herons Run Ln., Belmont Bay	55	56	57	57	0	N
25	Herons Run Ln., Belmont Bay	55	55	57	57	0	N

APPENDIX

SITE NO.	LOCATION AND DESCRIPTION	1998 EXIST Leq	2020 NO-BUILD Leq	BUILD: 2020 No Barrier Leq	BUILD: 2020 With Barrier Leq	INSERTION LOSS dB(A)	IMPACT Y/N
26	Herons Run Ln., Belmont Bay	55	55	57	57	0	N
27	Herons Run Ln., Belmont Bay	54	55	57	57	0	N
28	Herons Run Ln., Belmont Bay	54	55	57	57	0	N
29	Herons Run Ln., Belmont Bay	54	54	57	57	0	N
30	Herons Run Ln., Belmont Bay	54	54	57	57	0	N
31	Herons Run Ln., Belmont Bay	54	54	57	57	0	N
32	Herons Run Ln., Belmont Bay	54	54	57	57	0	N
33	Herons Run Ln., Belmont Bay	54	54	57	57	0	N
34	Herons Run Ln., Belmont Bay	54	54	57	57	0	N
35	Herons Run Ln., Belmont Bay	54	54	57	57	0	N
36	Herons Run Ln., Belmont Bay	54	54	58	58	0	N
37	Herons Run Ln., Belmont Bay	55	54	58	58	0	N
38	Herons Run Ln., Belmont Bay	55	54	58	58	0	N
39	Herons Run Ln., Belmont Bay	55	55	59	59	0	N
40	Herons Run Ln., Belmont Bay	56	56	61	61	0	N
41	Herons Run Ln., Belmont Bay	56	56	60	60	0	N
42	Herons Run Ln., Belmont Bay	56	56	60	60	0	N
43	Herons Run Ln., Belmont Bay	56	56	60	60	0	N
44	Herons Run Ln., Belmont Bay	56	56	60	60	0	N
45	Herons Run Ln., Belmont Bay	56	56	59	59	0	N
46	Herons Run Ln., Belmont Bay	56	56	59	59	0	N
47	Chatsford Ct., Belmont Bay	56	56	59	59	0	N
48	Chatsford Ct., Belmont Bay	56	56	60	60	0	N
49	Chatsford Ct., Belmont Bay	56	56	60	60	0	N
50	Chatsford Ct., Belmont Bay	56	56	60	60	0	N

APPENDIX

SITE NO.	LOCATION AND DESCRIPTION	1998 EXIST Leq	2020 NO-BUILD Leq	BUILD: 2020 No Barrier Leq	BUILD: 2020 With Barrier Leq	INSERTION LOSS dB(A)	IMPACT Y/N
51	Chatsford Ct., Belmont Bay	56	56	60	60	0	N
52	Chatsford Ct., Belmont Bay	56	56	60	60	0	N
53	Chatsford Ct., Belmont Bay	56	57	60	60	0	N
54	Chatsford Ct., Belmont Bay	59	59	62	62	0	N
55	Chatsford Ct., Belmont Bay	59	58	62	62	0	N
56	Chatsford Ct., Belmont Bay	58	58	62	62	0	N
57	Chatsford Ct., Belmont Bay	58	58	62	62	0	N
58	Herons Run Ln., Belmont Bay	59	58	62	62	0	N
59	Herons Run Ln., Belmont Bay	59	59	62	62	0	N
60	Herons Run Ln., Belmont Bay	59	59	63	63	0	N
61	Dogues Terrace, Belmont Bay	63	63	64	64	0	N
62	Dogues Terrace, Belmont Bay	62	62	63	63	0	N
63	Dogues Terrace, Belmont Bay	62	62	63	62	1	N
64	Dogues Terrace, Belmont Bay	61	61	62	61	1	N
65	Dogues Terrace, Belmont Bay	61	60	62	61	1	N
66	Dogues Terrace, Belmont Bay	60	60	62	61	1	N
67	Dogues Terrace, Belmont Bay	59	59	61	60	1	N
68	Dogues Terrace, Belmont Bay	58	58	61	60	1	N
69	Dogues Terrace, Belmont Bay	58	58	61	60	1	N
70	Dogues Terrace, Belmont Bay	58	58	61	60	1	N
71	Dogues Terrace, Belmont Bay	58	58	60	59	1	N
72	Dogues Terrace, Belmont Bay	58	58	61	60	1	N
73	Dogues Terrace, Belmont Bay	58	58	60	59	1	N
74	Colchester Ferry, Belmont Bay	59	59	61	60	1	N
75	Colchester Ferry, Belmont Bay	60	60	61	60	1	N

APPENDIX

SITE NO.	LOCATION AND DESCRIPTION	1998 EXIST Leq	2020 NO-BUILD Leq	BUILD: 2020 No Barrier Leq	BUILD: 2020 With Barrier Leq	INSERTION LOSS dB(A)	IMPACT Y/N
76	Colchester Ferry, Belmont Bay	60	60	62	61	1	N
77	Colchester Ferry, Belmont Bay	61	61	62	61	1	N
78	Colchester Ferry, Belmont Bay	61	61	62	61	1	N
79	Colchester Ferry, Belmont Bay	61	60	62	61	1	N
80	Colchester Ferry, Belmont Bay	61	60	62	61	1	N
81	Colchester Ferry, Belmont Bay	61	61	62	60	2	N
82	Colchester Ferry, Belmont Bay	61	60	62	60	2	N
83	Colchester Ferry, Belmont Bay	60	60	62	60	2	N
84	Colchester Ferry, Belmont Bay	60	60	62	60	2	N
85	Colchester Ferry, Belmont Bay	60	61	62	60	2	N
86	Colchester Ferry, Belmont Bay	60	61	62	60	2	N
87	Colchester Ferry, Belmont Bay	60	61	62	60	2	N
88	Colchester Ferry, Belmont Bay	60	60	62	59	3	N
89	Colchester Ferry, Belmont Bay	60	60	62	59	3	N
90	Colchester Ferry, Belmont Bay	60	60	62	59	3	N
91	Colchester Ferry, Belmont Bay	60	60	62	59	3	N
92	Colchester Ferry, Belmont Bay	60	61	62	59	3	N
93	Colchester Ferry, Belmont Bay	60	60	62	59	3	N
94	Colchester Ferry, Belmont Bay	60	60	61	58	3	N
95	Colchester Ferry, Belmont Bay	59	60	62	58	4	N
96	Colchester Ferry, Belmont Bay	59	60	61	57	4	N
97	Colchester Ferry, Belmont Bay	59	60	61	58	3	N
98	Colchester Ferry, Belmont Bay	59	60	61	57	4	N
99	Colchester Ferry, Belmont Bay	59	60	61	57	4	N
100	Colchester Ferry, Belmont Bay	59	60	61	57	4	N

APPENDIX

SITE NO.	LOCATION AND DESCRIPTION	1998 EXIST Leq	2020 NO-BUILD Leq	BUILD: 2020 No Barrier Leq	BUILD: 2020 With Barrier Leq	INSERTION LOSS dB(A)	IMPACT Y/N
101	Colchester Ferry, Belmont Bay	59	60	61	57	4	N
102	Colchester Ferry, Belmont Bay	59	60	61	57	4	N
103	Colchester Ferry, Belmont Bay	59	60	61	57	4	N
104	Colchester Ferry, Belmont Bay	59	60	61	57	4	N
105	Colchester Ferry, Belmont Bay	59	60	61	58	3	N
106	Colchester Ferry, Belmont Bay	59	60	61	58	3	N
107	Colchester Ferry, Belmont Bay	60	60	62	59	3	N
108	Colchester Ferry, Belmont Bay	60	60	62	59	3	N
109	Colchester Ferry, Belmont Bay	60	60	62	59	3	N
110	Colchester Ferry, Belmont Bay	60	61	61	59	2	N
111	Railroad Avenue	64	65	66	61	5	Y
112	Railroad Avenue	64	65	66	60	6	Y
113	Railroad Avenue	69	70	71	N/A	N/A	Y
114	Railroad Avenue	64	65	66	60	6	Y
115	Railroad Avenue	69	70	70	N/A	N/A	Y
116	Railroad Avenue	63	64	66	61	5	Y
117	Ospreys Golf Course	56	56	59	57	2	N
118	Ospreys Golf Course	58	58	58	58	0	N

Note: Sites 113 and 115 will be taken to relocate Railroad Avenue if Barrier 1 is constructed east of the railroad tracks.

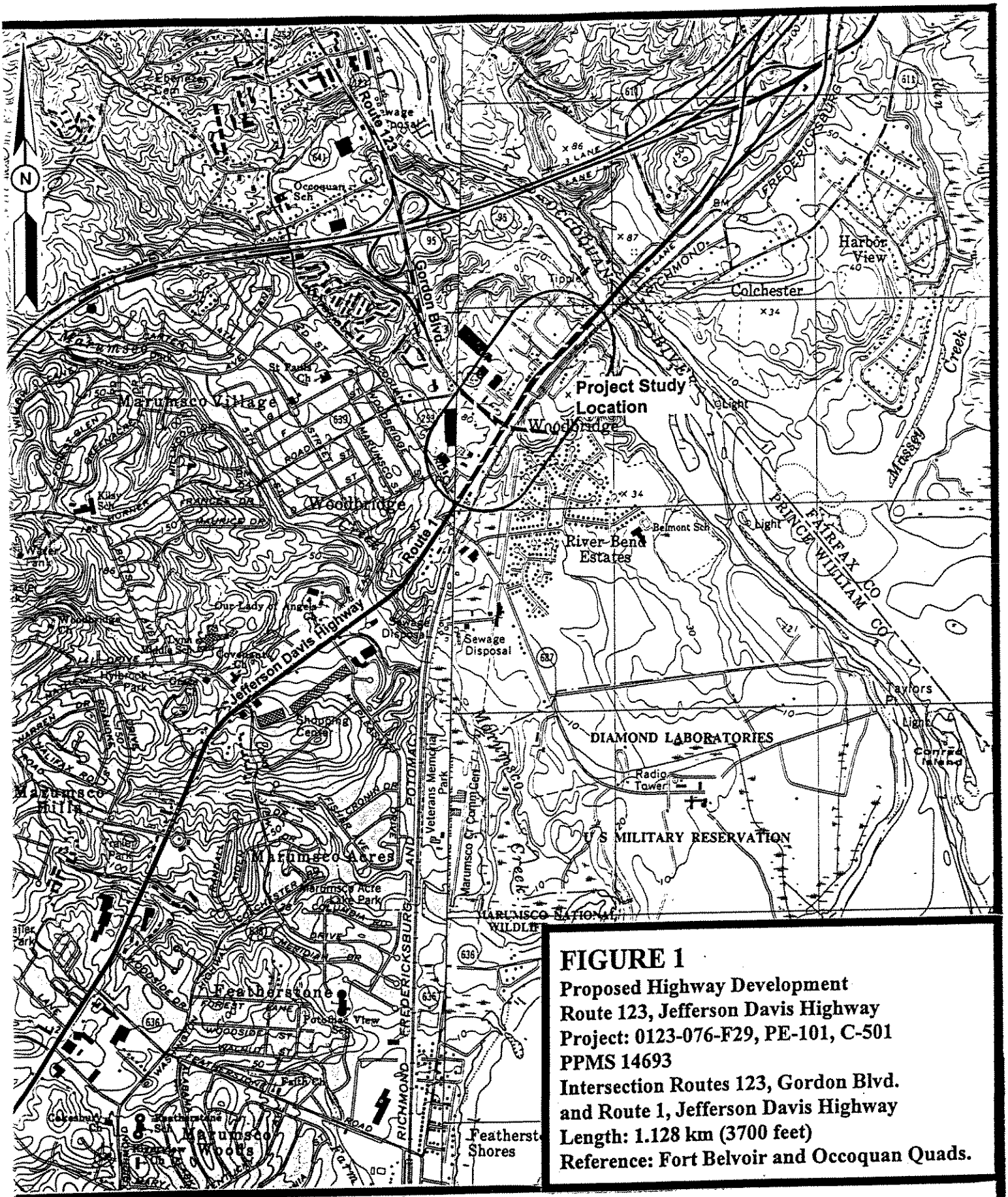
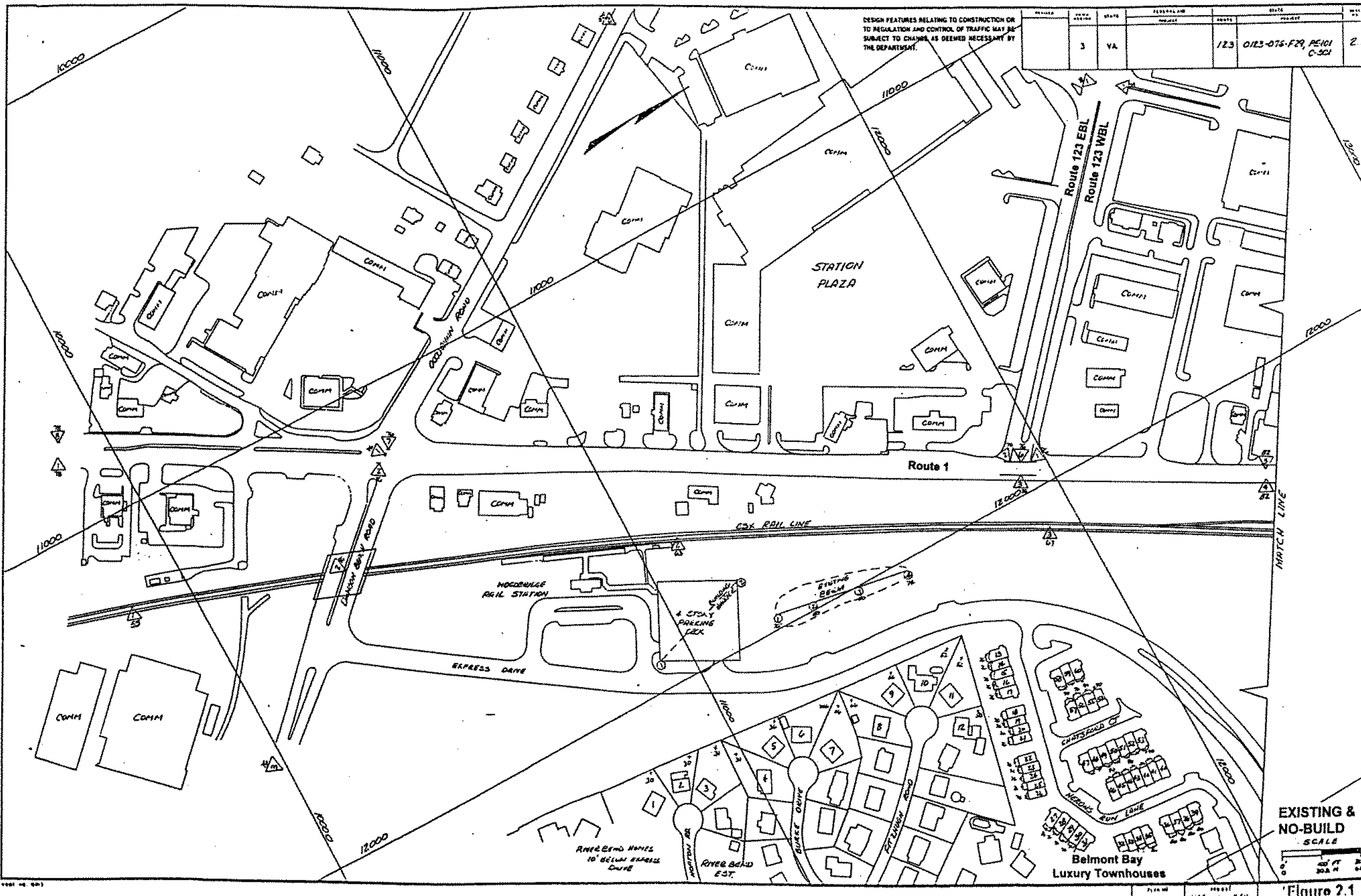


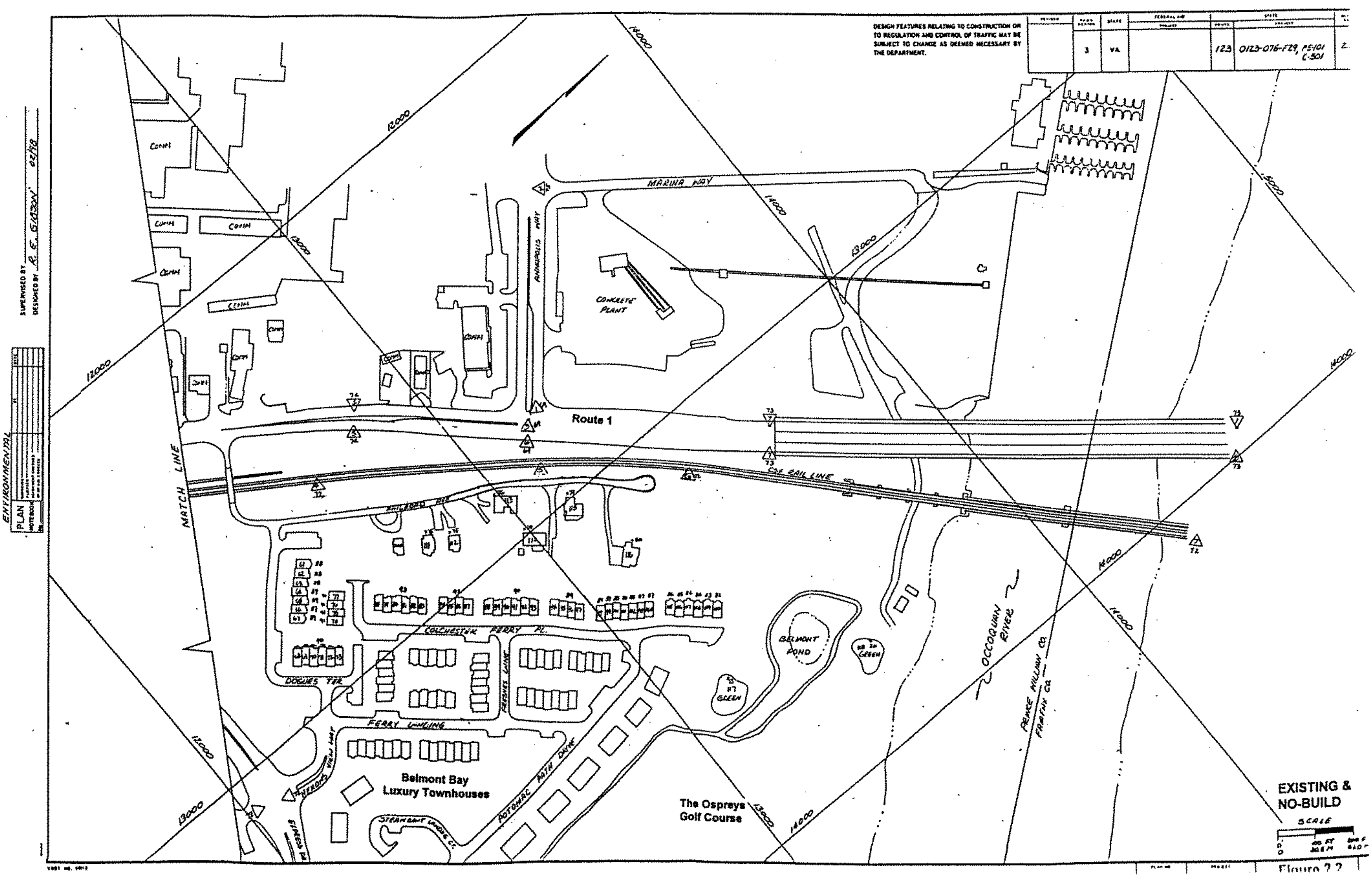
FIGURE 1

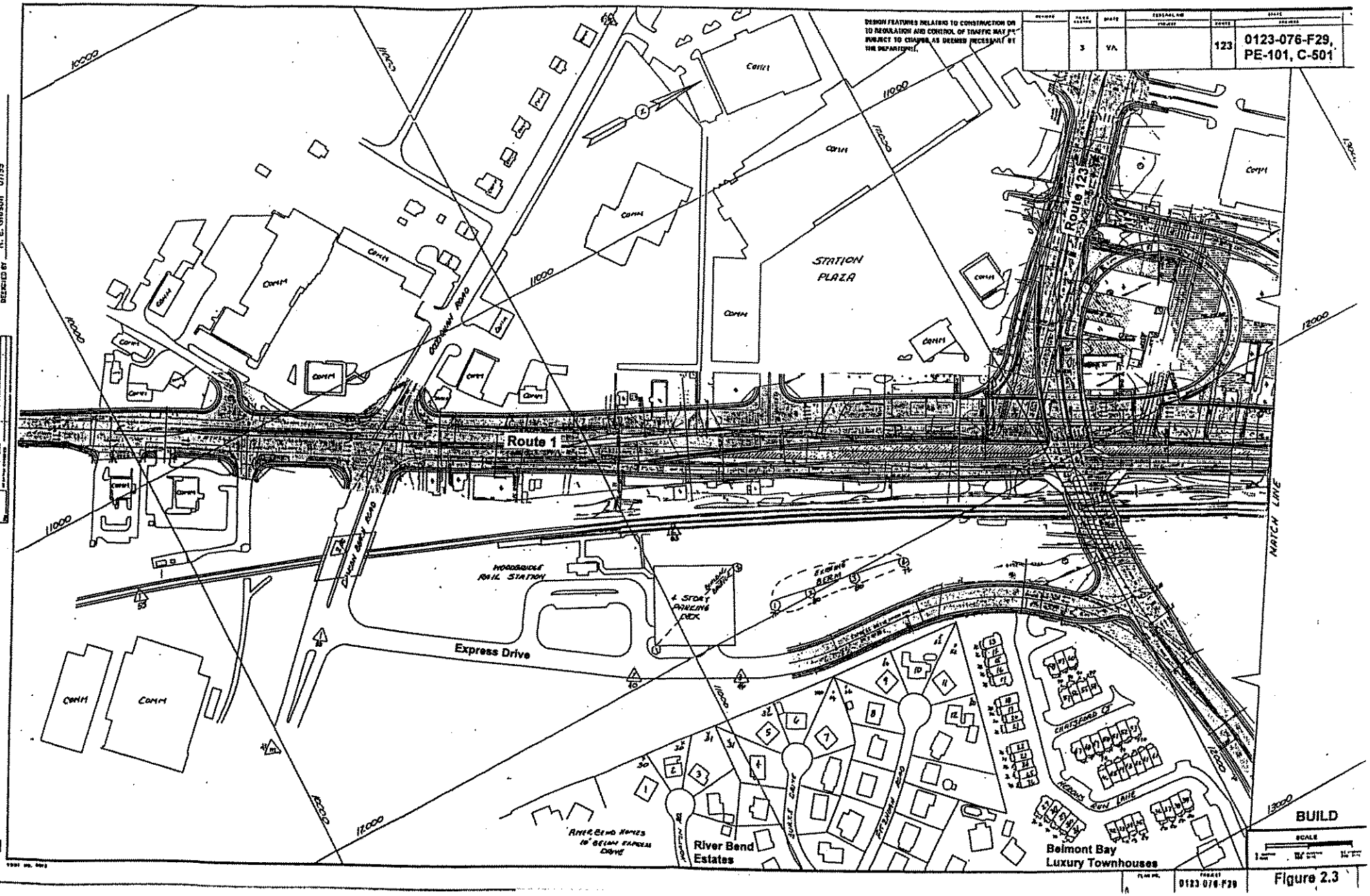
Proposed Highway Development
Route 123, Jefferson Davis Highway
Project: 0123-076-F29, PE-101, C-501
PPMS 14693
Intersection Routes 123, Gordon Blvd. and Route 1, Jefferson Davis Highway
Length: 1.128 km (3700 feet)
Reference: Fort Belvoir and Occoquan Quads.

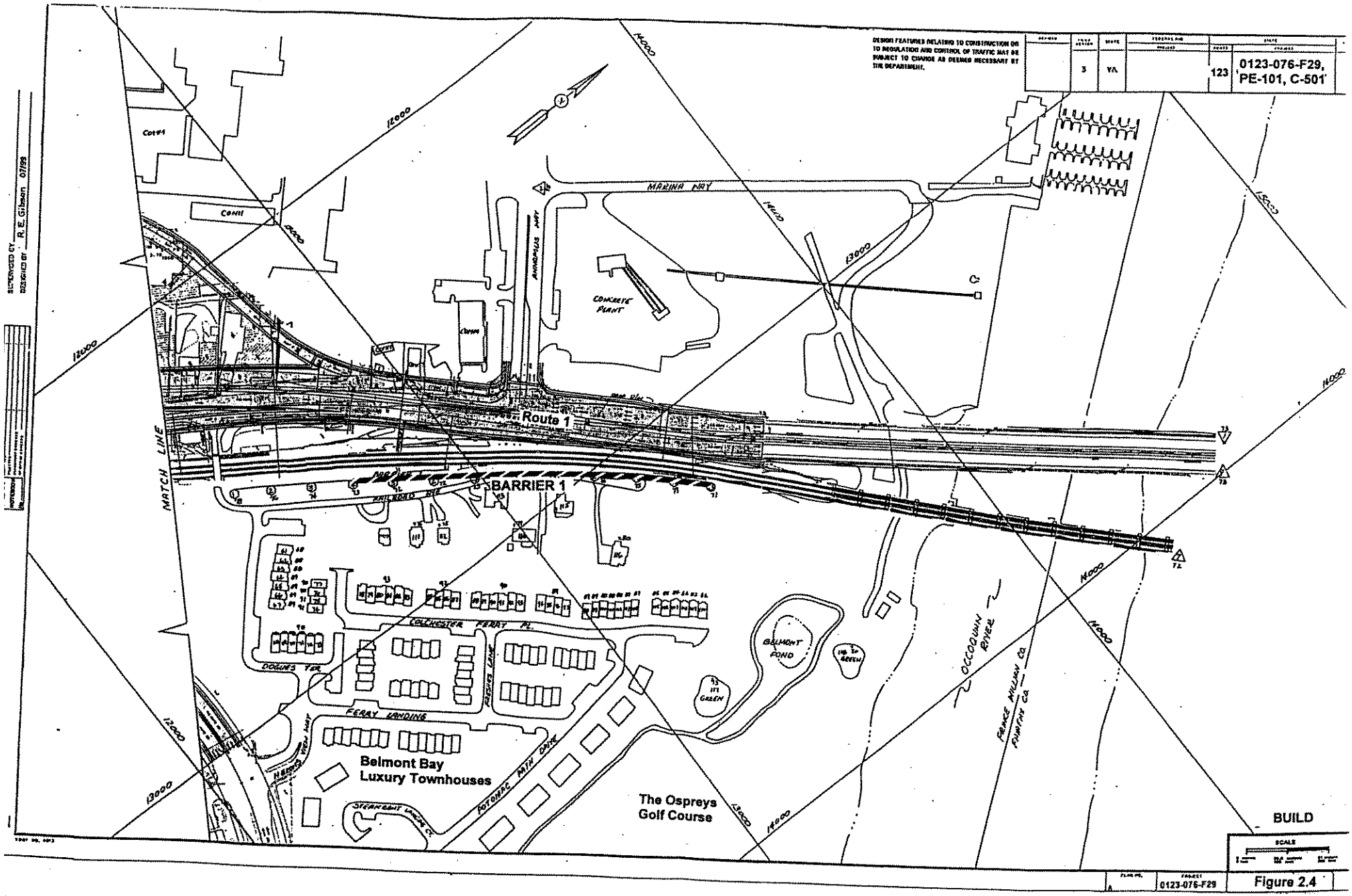


DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT.
3
VA.
123
0123-076-F29, PE101 C-501
Route 123 EBL
Route 123 WBL
STATION PLAZA
Route 1
CSX RAIL LINE
MATCH LINE
WOODBRIDGE RAIL STATION
4 STORY PARKING DECK
EXISTING BERM
EXPRESS DRIVE
OCCOQUAN ROAD
CHATSFORD CT
HERON'S RUN LANE
FITZHUGH ROAD
BURKE DRIVE
NORTON RD.
RIVER BEND HOMES 10' BELOW EXPRESS DRIVE
RIVER BEND EST.
Belmont Bay
Luxury Townhouses
EXISTING &
NO-BUILD
SCALE
PLAN
SUPERVISED BY
DESIGNED BY R. E. GIBSON 02/93

Figure 2.1


DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT.
3
VA.
123
0123-076-F29, PE101 C-501
MARINA WAY
ANNAPOLIS WAY
CONCRETE PLANT
Route 1
CSX RAIL LINE
RAILROAD AVE
MATCH LINE
COLCHESTER FERRY PL.
DOGUES TER.
FRESHES LANE
FERRY LANDING
HERON'S VIEW WAY
EXPRESS DR
STEAMBOAT LANDING CT.
POTOMAC PATH DRIVE
Belmont Bay
Luxury Townhouses
BELMONT POND
The Ospreys
Golf Course
OCCOQUAN RIVER
PRINCE WILLIAM CO.
FAIRFAX CO.
EXISTING &
NO-BUILD
SCALE
ENVIRONMENTAL
PLAN
SUPERVISED BY
DESIGNED BY R. E. GIBSON 02/98
Figure 2.2


Route 1
Route 123
Express Drive
STATION PLAZA
Woodbridge Rail Station
4 STORY PARKING DECK
River Bend Estates
Belmont Bay Luxury Townhouses
MATCH LINE
0123-076-F29, PE-101, C-501
Figure 2.3


DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT.
123
0123-076-F29, PE-101, C-501
MARINA WAY
CONCRETE PLANT
Route 1
BARRIER 1
MATCH LINE
COLCHESTER FERRY PL.
FERRY LANDING
Belmont Bay
Luxury Townhouses
The Ospreys
Golf Course
BELMONT POND
OCCOQUAN RIVER
PRINCE WILLIAM CO.
FAIRFAX CO.
POTOMAC MTN DRIVE
BUILD
0123-076-F29
Figure 2.4